TOPCON
Precision Agriculture

PCS100
Operators Manual

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Preface

This manual has been developed to provide you with information necessary to operate and maintain this Topcon Precision Agriculture (TPA) product. Proper service and use is important for the safe and reliable operation of the product. The sections provided in this manual include information necessary for the safe and correct operation, care, and troubleshooting of this product. The benefits this product provides can be greatly influenced by your knowledge of the products described in this manual.

NOTICE

Please read these Terms and Conditions carefully.

Terms and Conditions

General

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IMPORTANT: SAFETY - Improper use of the product can lead to death or injury to persons, damage to property and/or malfunction of the product. The product should only be repaired by authorized TPA service centres. You should closely review the safety warnings and directions as to the proper use of the product in this manual and at all times comply with the same.

Limited Warranty

ELECTRONIC and MECHANICAL COMPONENTS -TPA warrants that the electronic components manufactured by TPA shall be free of defects in materials and workmanship for a period of one year from the original date of shipment to the dealer. TPA warrants that all valves, hoses, cables and mechanical parts manufactured by TPA shall be free of defects in materials and workmanship for a period of 12 months from the date of sale.

RETURN and REPAIR - During the respective warranty periods, any of the above items found defective may be shipped to TPA for repair. TPA will promptly repair the defective item at no charge, and ship it back to you. You must pay the shipping and

handling charges in respect of the same. Calibration of components, labour and travel expenses incurred for in-field removal and replacement of components are not covered in this warranty policy. Damage to components due to negligence, abuse or improper use, maintenance, modification or repair is NOT covered under this warranty.

WARRANTY DISCLAIMER - Other than for the above warranties or warranties in an appendix or a warranty card accompanying the product, this manual and the product are provided 'as is'. There are no other warranties and to the extent allowed by law TPA excludes all implied terms, conditions and warranties in respect of the manual and the product (including any implied warranty or merchantability or fitness for any particular use or purpose).

LIABILITY LIMIT and INDEMNITY - TPA and its dealers, agents and representatives shall not be liable for technical or editorial errors or omissions contained herein or for special, indirect, economic, incidental or consequential damages resulting from the furnishing, performance or use of this material or the product (including where TPA has been advised of the possibility of such damage). Such disclaimed damages include but are not limited to loss of time, loss or destruction of data, loss of profit, savings or revenue or loss of or damage to the product. In addition, TPA is not responsible or liable for damages or costs incurred in connection with obtaining substitute products or software, claims by others, inconvenience, or any other costs.

In any event, TPA's liability to you or any other person for any claim, loss or damage (in contract, tort or on any other basis) will be limited (in TPA's option) to either (a) the replacement or repair of the product, or (b) payment of the cost of replacing or repairing the product. You indemnify and hold TPA harmless against any claim, action, damage, loss, liability or cost (including legal fees) which TPA incurs arising from (a) your operation, use and/or maintenance of the product other that in accordance with the

terms set out in this manual, or (b) your negligence or wrongful act or omission in respect of the product.

Other

These Terms and Conditions may be amended, modified, superseded or cancelled, at any time by TPA. These Terms and Conditions will be governed by, and construed in accordance with:

- the laws of South Australia if the product is sold and supplied to you in Australia (in which case the courts of South Australia or the Federal Court of Australia (Adelaide Registry) have exclusive jurisdiction in respect of any claim or dispute); or

- the laws of the State of California if the product is sold and supplied to you outside of Australia.

All information, illustrations, and applications contained herein are based on the latest available information at the time of publication. TPA reserves the right to make product changes at any time without notice.

If any part of these Terms and Conditions would be unenforceable, the provision must be read down to the extent necessary to avoid that result, and if the provision cannot be read down to that extent, it must be severed without affecting the validity and enforceability of the remainder of these Terms and Conditions.

Service Information

Service assistance can be provided by contacting your local TPA Authorised Dealer.

Communications Regulation Information

FCC Compliance Statement (USA)

This equipment has been tested and found to comply with the limits for a Class 'A' digital device, pursuant to Part 15 of the FCC Rules. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

FCC Compliance Statement (Canada)

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulation.

CE EMC Statement (European Community)

Warning: This is a class 'A' product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

'C' Tick EMC Statement (Australia & New Zealand)

This product meets the applicable requirements of the Australia and New Zealand EMC Framework.

Radio & Television Interference

This computer equipment generates, uses, and can radiate radio-frequency energy. If it is not installed and used correctly – that is, in strict accordance with TOPCON Precision Agriculture instructions – it may cause interference with radio communication.

You can determine whether your computer system is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral electronic devices.

If your computer system does cause interference to a radio or other electronic device, try to correct the interference by using one or more of the following measures:

- Turn the radio antenna until the interference stops.
- Move the computer to either side of the radio or other electronic device.
- Move the computer farther away from the radio or other electronic device.
- Connect the computer to a different circuit to the radio or other electronic device.

If necessary contact your nearest TOPCON Precision Agriculture dealer for assistance.

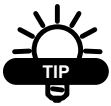
Important: Changes or modifications to this product not authorized by TOPCON Precision Agriculture could void the EMC compliance and negate your authority to operate the product.

This product was tested for EMC compliance under conditions that included the use of TOPCON Precision Agriculture peripheral devices & TOPCON Precision Agriculture shielded cables and connectors between system components.

It is important that you use TOPCON Precision Agriculture peripheral devices between system components to reduce the possibility of causing interference to radios and other electronic devices.

Manual Conventions

This Manual uses the following conventions:



Supplementary information that can help you configure, maintain, or set up a system.

Supplementary information that can have an effect on system operation, system performance, measurements & personal safety.

Notification that an action has the potential to adversely effect system operation, system performance, data integrity, or personal health.

Notification that an action *will* result in systems damage, loss of data, loss of warranty, or personal injury.

UNDER NO CIRCUMSTANCES SHOULD THIS ACTION BE PERFORMED.

Introduction

Figure 2-1. PCS100 Console

Congratulations on your purchase of your PCS100 console. The PCS100 is a guidance console designed and built by Topcon Precision Agriculture to assist you in your farming activities.

In this operators manual, you will find instructions on how to setup the physical connections of your console and also how to configure the software for use. The button interface is designed to be straight forward and intuitive, allowing you to setup quickly for immediate operation.

The PCS100 is robust and is designed to operate in harsh conditions. The water tight casing protects the PCS100 from moisture and dirt, elements that can be a frequent cause for concern for most electronic equipment in the field.

While designed to be robust, these features exist to ensure the longevity of your PCS100 and serve only as precautions to protect you console in the event of such cases. Never push the limits of your console and always keep the PCS100 well within its operating parameters whenever possible.

Utilizing the guidance software, you will be able to determine the coverage of your field more accurately, whether it be seeding, spraying, spreading or harvesting. This allows you, as the user, to know precisely where you have driven your vehicle and how much area you have covered with it.

Moreover, rather than simply knowing how much area you have covered, the ability of the PCS100 to create and save field boundaries means you can determine the size of the total area of your field before you even start your coverage.

After coverage, you will also be able to create a coverage report that will give you a summary of your job. This information includes the amount of area you covered, the total area of your field (if you created a boundary), the time spent mapping the field, the total time spent on the field and also the start and end date of your job.

With the PCS100, you will have the opportunity to step ahead of the competition and improve your farming activity now and in the future.

Using this Manual

The following chapters in this manual will assist you in setting up and understanding the features of your PCS100:

- Chapter 4, “Basic Concepts of the PCS100” provides an overview of how the PCS100 functions
- Chapter 5, “PCS 100 Kit Components” provides a brief explanation on the function of each component in the PCS100 Kit
- Chapter 6, “Setting up the PCS100” instructs you on how to set up the physical connections of the PCS100 before turning it on
- Chapter 7, “Getting Started” explains how to turn ON the PCS100 and provides an overview of the buttons and functions that you will use when operating the PCS100
- Chapter 8, “Creating a Boundary” explains how to create and save a boundary file. The boundary of your field will be saved and can be used over again for different application jobs
- Chapter 9, “Starting a New Application Job” explains how to create and save an application Job file. This is usually done after a boundary has been loaded and you want to start a new application job. This file will store your field application information, displaying the area that has been covered by your vehicle on a given field
- Chapter 10, “Using Guidance Patterns” shows you how to apply guidance patterns so that you can map your field more accurately

- Chapter 11, “Backup and Import files from Thumbdrive” explains how to backup your files to a thumbdrive and import them back onto your console when need them again

- Chapter 12, “Quick Start Reference” provides quick start instructions on how to create a boundary and start a new coverage job

- Appendix A, “Button Index” Provides you with an index of all the icons used in the console for your reference. This section also explains to you how to use the buttons on the alphanumeric screen to enter letters and numbers

- Appendix B, “Spare Parts List” lists the items that you would find in the Kit that your purchase

  Appendic C, “Product Specifications” displays the electrical, physical and environmental specifications of the PCS100. Listed also are the dimensions of the console

- Appendix D, “Tractor Schematic” has an image of a tractor that is used as refernce when taking necessary measurements for the software to work

- Appendix E, “Electrical Schematics” displays the wiring connections for all the main harnesses used in the PCS100.

- Appendix F, “File Name Information” provides an overview of the different file types that are used during the operation of the PCS100

- Appendix G, “Using a USB Thumbdrive” explains how to properly insert and remove a USB thumbdrive from the PCS100 console

Basic Concepts of the PCS100

The PCS100 is a standalone guidance console and is installed to assist users with guiding their vehicle when in a field. It is attached to the inside of the vehicle cabin and provides a virtual guide that the user may follow for more accurate coverage of a given field

GPS

The PCS100 is compatible with both GPS and DGPS receivers and offers accuracy from entry-level GPS through DGPS free-to-air marine beacon and WAAS (where available) and subscription systems (including OmniSTAR®, VBS and HP), to Real-time Kinetic (RTK) radio systems offering a range of positioning accuracy to meet any application.

Guidance

Using the GPS, the PCS100 is able to identify the precise coordinates of the GPS antenna attached to the vehicle. Using this, the PCS100 is able to generate a virtual map of your current location and place a representation of your vehicle on that map.

The geographic location of your vehicle on the map correlates with the geographic location of your vehicle in reality. This is how you are able to map the boundaries and the coverage of your field as you drive across it, as the GPS is able to track precisely the area that you have travelled across.

Boundary Mapping

With boundary mapping, you are able to create an outline of your field that you can then use over again for any application job that you perform on that field.

The benefits of this include being able to know the exact size of your field before moving off and also being able to plan your coverage route before hand.

Coverage Mapping (Application Mapping)

After knowing the precise area of your field with Boundary Mapping, Coverage Mapping can now be used to track the area covered by your vehicle. The benefits of this include being able to identify missed areas so that you may go over that area again.

Alternatively, it will also help you identify areas of overlap so in future you can plan your driving route more carefully so as not to over applicate on a given crop.

PCS100 Kit Components

This chapter will provide you with an overview of the components that you will find in your PCS100 Kit.

PCS100 Console

Figure 5-1. #9258-0000-02 - PCS100 Console

The PCS100 is the main console to which everything connects to

Lightbar

The lightbar sits on top of the PCS100 console and has a part number of #9192-0000.

Power/CAN Harness

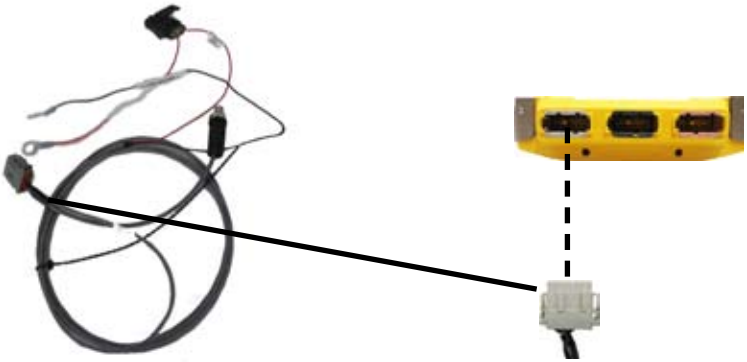


Figure 5-2. #AGA3240 - Power/CAN Harness

The Power/CAN harness supplies power to the PCS100 console and connects directly to the battery. The grey connector plugs into the grey port behind the PCS100 console (Figure 5-2).

Remote Hook Up Mapping Harness

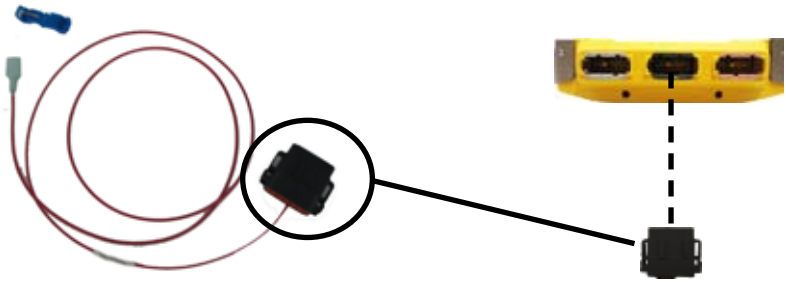


Figure 5-3. #AGA3442 - Remote Hook Up Mapping Harness

This harness must be used for remote start/stop of the coverage map. This works by applying positive voltage to the harness to start mapping, and removing the voltage to stop mapping. The black connector plugs into the black port behind the PCS100 console (Figure 5-3).

Universal GPS Harness

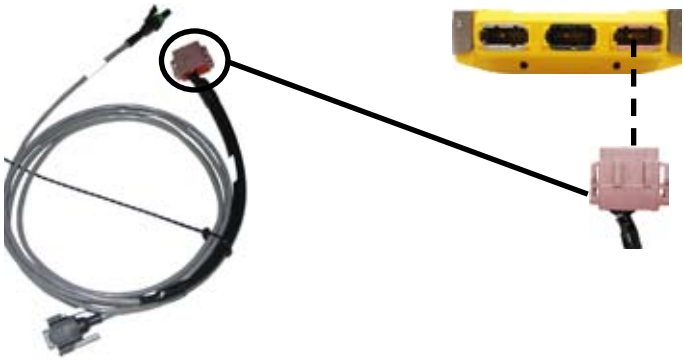


Figure 5-4. #AGA3443 - Universal GPS Harness

This harness is used to allow data transmission between the PCS100 and a GPS that has a DB9 connection and is able to supply power via a 2-Pin weatherpack connection. The pink connector plugs into the pink port behind the PCS100 console (Figure 5-4).

AGE-1 and AGE-2 GPS Harness

Figure 5-5. #AGA3441 AGE-1 GPS and #AGA3242 AGE-2 GPS Harnesses

This harness connects directly from the red 12-Pin Port to the AGE-1 or AGE-2 GPS Antenna. The harness supplies 12V power to the GPS and NMEA data to the PCS100 (Figure 5-5).

AGE-1 and AGE-2 GPS Antenna

Figure 5-6. AGE-1 (Left) and AGE-2 (Right) GPS Antenna

This is the GPS Antenna that is placed on top of the tractor. It sits on a mount and its view must not be obstructed, as this could cause any incoming GPS signals to degrade.

GPS Magnetic Mount

Figure 5-7. #AGA1727 - GPS Magnetic Mount

This is the mount the GPS Antenna (Figure 5-6) will sit on. The mount is fixed to the top of the tractor as close to the center as possible. Centering the GPS Antenna allows for a more accurate depiction of the tractor's virtual path in the console.

RAM® Mount and Base

Figure 5-7. #B103 - RAM® Mount Arm and #B105 RAM® Mount Base

The RAM® Mount is used to mount the PCS100 in the tractor cab.

Notes:

Setting Up the PCS100

This chapter will provide you with instructions on how to setup the physical connections of the PCS100.

Mounting the Console to the Tractor Cab

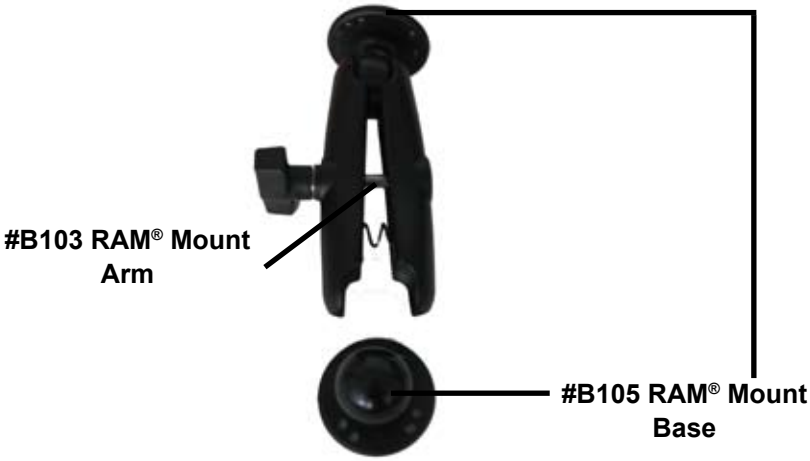


Figure 6-1. #B103 - RAM® Mount Arm and #B105 RAM® Mount Base

1. Locate the RAM® Mount component (Figure 6-1) from the kit
2. Lightly turn the handle counter-clockwise, to release the ball mount on the spring side

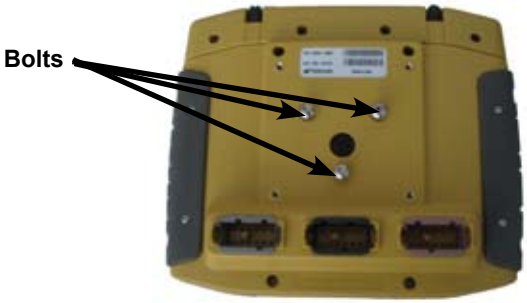


Figure 6-2. PCS100 Rear View

3. Place the PCS100 console face down, on a clean cloth to avoid scratching or dirtying the screen

4. Line up the 3 holes on the Ball Mount with the 3 bolts behind the PCS100 (Figure 6-2)

5. Using a 3mm Allen Key, attach the Ball Mount to the rear of the PCS100 (Figure 6-3)

Figure 6-3. Ball Mount Attached to Rear of PCS100

6. In a position that is easily accessible from the driver's seat, but will not impede your vision while driving, mount the RAM® Mount.

Figure 6-4. Attach the PCS100 to the RAM® Mount

7. With both mounts secure, attach the PCS100 to the inside of the tractor cabin using the RAM® Mount. Turn the handle (Figure 6-4) clockwise to tighten the connection between the Ball Mount on the PCS100 and the RAM® Mount.

GPS Fitup

Figure 6-5. Screw the AGE-1 or AGE-2 Antenna onto the Magnetic Mount

1. Screw the AGE-1 or AGE-2 Antenna onto the Magnetic Mount (Figure 6-5)

2. Mount the magnetic base to a metal surface on the vehicle's roof, as close as practicable to the center of the vehicle (left/right) with a clear view of the sky, and not obstructed by lights and other roof attachments

For third party GPS units that have DB9 connections and alternate power sources, use the Universal GPS harness (#AGA3443).

This harness allows attachment to the PCS100 Deutsch connector and also to the GPS DB9 connector.

There is also switched power supplied by the console to allow the third party GPS to be turned ON/OFF when the PCS100 is switched ON.

Figure 6-6. Fit GPS Harness (#AGA3441 or #AGA3242) to Antenna

3. Fit the supplied GPS Antenna harness to the AGE-1 Antenna (ensuring that the connection is tight)

4. Route the harness into the vehicle cabin

NOTICE *NOTICE*

It is recommended that the GPS Harness (Figure 6-6.) be tied or wrapped around the magnetic mount base to reduce stress on the harness connector and prevent damage should the harness be pulled suddenly.

WARNING **WARNING**

Ensure that the harness is secured properly away from heat and moving machine parts. Improper placement could result in the harness getting entangled, bent, burnt or crushed, causing permanent damage to the harness.

Figure 6-7. Fit GPS Harness (#AGA3441 or #AGA3242) to Color Coded Connection Port

5. Connect the Deutsch connection of the GPS harness to the color coded port on the PCS100 (figure 6-7).

NOTICE

NOTICE

There is only one way to plug the connectors into the port. When done properly, the connectors should slot in and the side clips will click, do not force it in.

Remote Hookup

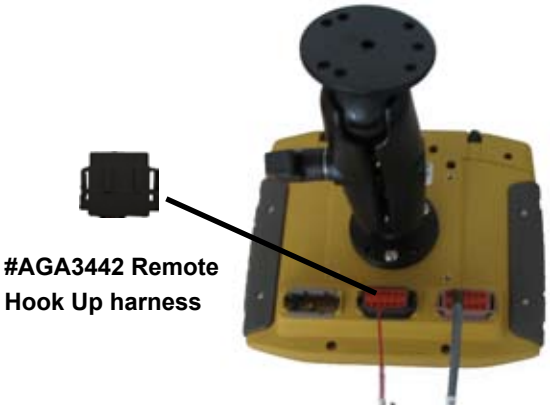


Figure 6-8. Fit Remote Hook Up Harness (#AGA3442) to Color Coded Connection Port

1. Connect the Remote Hook Up harness (#AGA3442) to the center port (figure 6-8). This harness allows Guidance mapping to be remotely activated

   There is a “snap to” electrical connector supplied within the kit.

2. Locate a positive input power source from the controller that is being used, and connect the “snap to” connector

3. Connect the loose female spade connector on the Remote Hook Up harness (# AGA3442) to the “snap to” connector.

NOTICE *NOTICE*

There should be a positive voltage through the applicator wire when the Master Switch is ON and zero voltage when the Master Switch is OFF.

Power

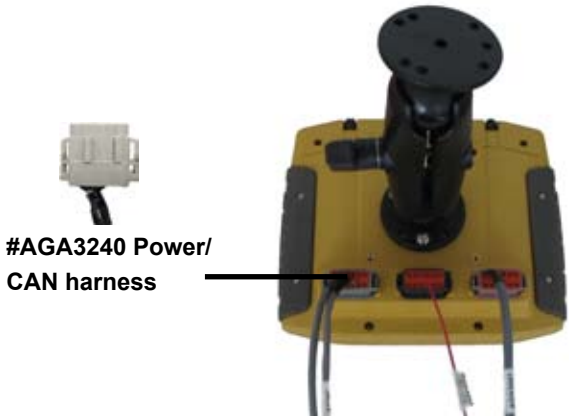


Figure 6-9. Fit Power/CAN harness (#AGA3240) to Color Coded Connection Port

1. Connect the Power/CAN harness (#AGA3240) Deutsch connector to the left port (figure 6-9). This harness supplies positive voltage to the PCS100.

2. Connect the leads on the other end of the harness directly to a battery. Red leads should connect to the positive terminal and black leads should connect to the negative terminal.

WARNING

The console is rated 9-32VDC, do not attach the leads to anything outside this voltage rating. Also ensure that the terminals are connected as stated in the instructions, as reversing the polarity can damage the console.

Getting Started

This chapter will provide you with instructions on how to turn on the PCS100 as well as explain the functions of the buttons you will find on the ***Working*** screen

Figure 7-1. PCS100 front view

1. Ensure that the PCS100 is connected to a power supply

2. Press and hold the Power button (for approximately 1 second) to turn on the PCS100 console

The green LED in the middle of the button will turn on to indicate that the PCS100 has power and the startup sequence will begin.

3. A ***Warning*** screen (Figure 7-2) will appear displaying the products disclaimer.

4. **Read the entire disclaimer before proceeding.**

5. Select the down arrow button to scroll down the screen.

WARNING

This Topcon Precision Agriculture console and software (System) controls guidance, The System may be used to assist with planting, spraying, spreading and fertilizing (Applications).

IMPORTANT: You must read and follow the appropriate System manuals and have appropriate training before use. If you do not operate the System properly it will not correctly assist with guidance or apply the Applications to your requirements. This can result in damage to property and equipment, serious injury to persons, poor yields and/or crop damage or failure.

You are responsible for accurately entering the information required for the System to apply the Applications to your requirements (including measurement units (e.g. metric or imperial), vehicle dimensions, rate of application and vehicle speed). You are responsible for the calibration of the System and ensuring Applications are applied in accordance with their specifications (including wind, temperature and moisture conditions, dilution and withholding periods).

Failure by you to comply with the above may result in incorrect operation of the System. You should monitor at all times that the System is performing as required.

By selecting the YES button you agree that you:

- **have read the above, have appropriate training and have read the System manual; and**
- **assume control and responsibility for the use of the System.**

Figure 7-2. Warning Screen

6. Select **YES** if you have read the disclaimer and accept the conditions of use.

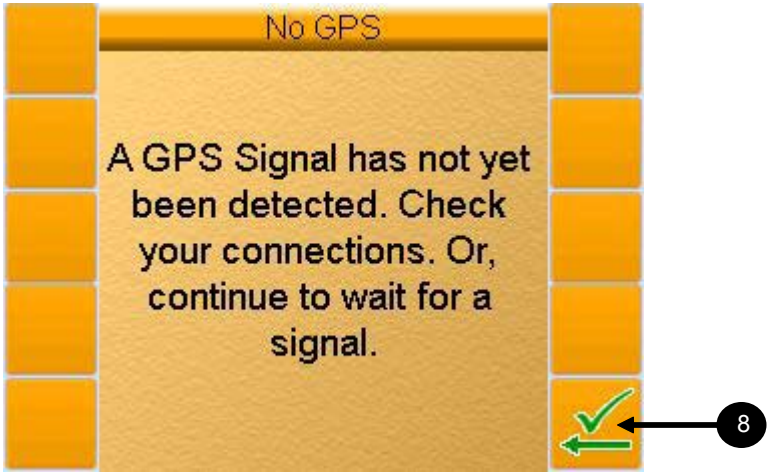


Figure 7-3. No GPS Signal Detected Notice

If a GPS signal is not detected, the screen shown in figure 7-3 will appear. If you have a GPS antenna connected and this screen appears, ensure that all harnessing is correct and refer to GPS Settings on page 7-27 to verify if the GPS is receiving.

7. Select to access the ***Working*** screen.

NOTICE *NOTICE*

Selecting the acceptance button will allow access to the PCS100 Working screen, however Guidance will not be activated until a GPS signal has been detected.

NOTICE *NOTICE*

The clock on the console must be set the first time the PCS100 is turned on with a GPS signal. The clock only needs to be re-set if the PCS100 is taken into a different time zone. Refer to page 7-20 for instructions to set the clock.

Overview of Functions on Main Screen

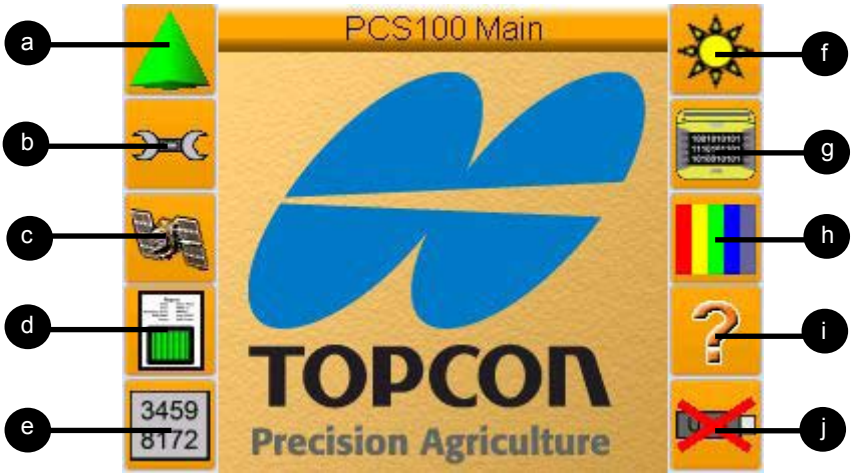


Figure 7-4. PCS100 Main Working Screen

Label		Description
a		Accesses the Guidance Screen
b		Accesses the Guidance Setup Screen
c		Accesses the GPS Settings Screen
d		Accesses the Job Setup Screen
e		Accesses the System Memory and Diagnostics screen
f		Day or night mode
g		Reprogram the console/ Upgrade the console
h		Change the color scheme
i		View the PCS serial number
j		Safely remove the USB thumbdrive

a. The Guidance Screen

This section will provide you with an introduction to the features found on the ***Guidance*** screen.

Select (figure 7-4) to access the ***Guidance*** screen (figure 7-5).

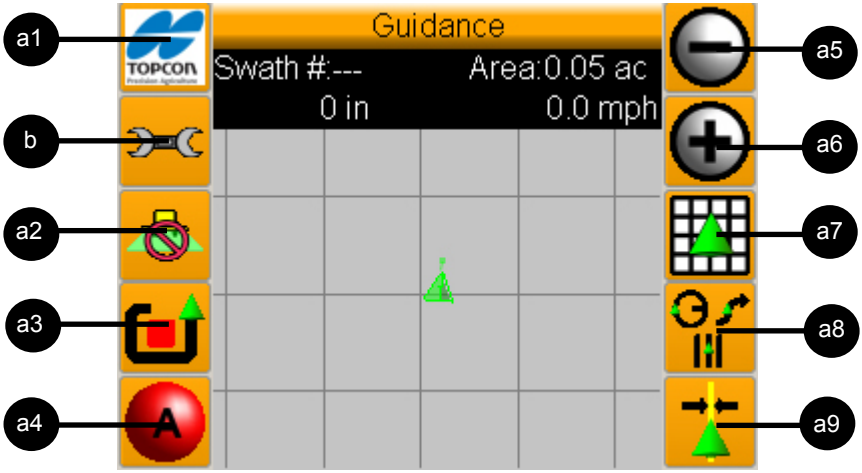


Figure 7-5. Guidance Screen

Label	Description
a1	Returns you to the Main screen
b	Accesses the Guidance Setup screen
a2	Indicates whether mapping is ON or OFF
a3	Record/Pause/Complete/Create a boundary
a4	Guide options for selected guidance pattern
a5	Zoom out for wider view of coverage map
a6	Zoom in for closer view of coverage map
a7	Changes the viewing perspective
a8	Accesses the Select Guidance Pattern screen
a9	Nudge

a1. The Main Screen

Select to return to the ***Main*** Screen. The ***Main*** Screen (figure 7-4 on page 7-4) is where you can access all the main settings of the PCS100 console.

a2. Mapping ON/OFF indicators

This button changes, depending on which coverage map option is selected. This is configured under ***Coverage Sense Setup Screen***, page 7-25.

If **ALWAYS ON** is selected, the screen will appear as shown in figure 7-6

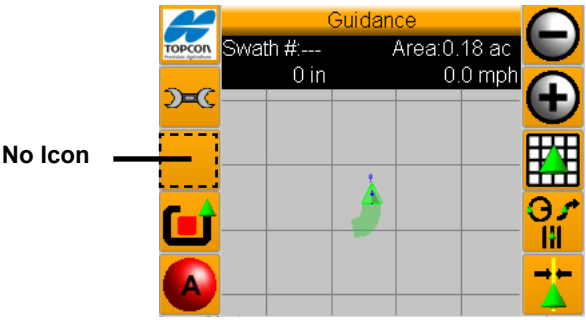


Figure 7-6. Guidance Screen with ALWAYS ON Coverage Mapping

The area where the Mapping ON/OFF button is normally located on the ***Guidance*** screen is empty when **ALWAYS ON** is selected.

This is because when **ALWAYS ON** is selected, coverage mapping cannot be turned OFF from the ***Guidance*** screen.

If **MANUAL** is selected, the screen will appear as below.

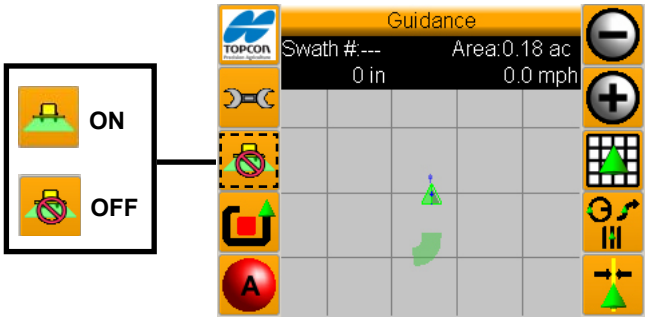


Figure 7-7. Guidance Screen with MANUAL Coverage Mapping

The tractor icon appears and can be selected to turn mapping ON and OFF.

If **SWITCHED** is selected, the screen shown in figure 7-8 will appear.

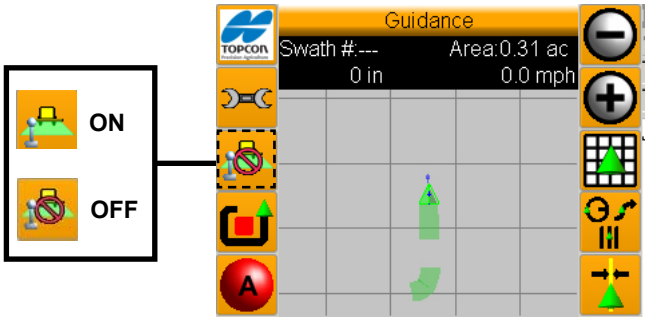


Figure 7-8. Guidance screen with SWITCHED coverage mapping

The tractor icon with a switch appears, and will turn ON when positive voltage is detected at the switch sensor. The voltage may come from sources ranging from a manual switch in the cabin, to a sensor detecting when a sprayer section is turned on.

a3. Boundary creation buttons

This button changes during the boundary creation process.

After a new boundary file has been created, these buttons are used on the guidance screen to start and pause the creation of a boundary, close the boundary and also quick create a new boundary file.

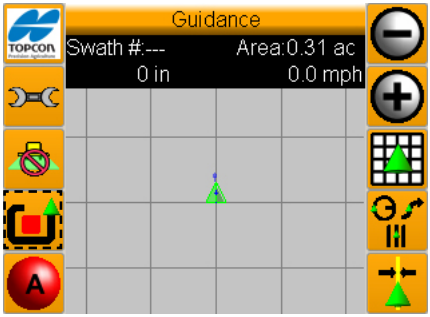


Figure 7-9. Boundary Mapping OFF

Select to start recording the boundary. After selecting this button, you are expected to begin driving along your field boundary.

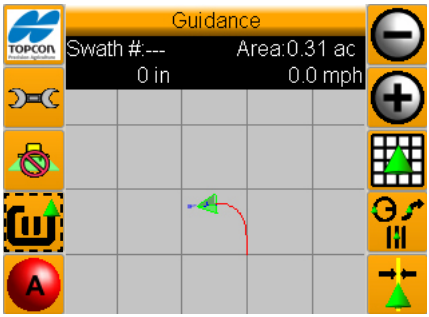


Figure 7-10. Boundary Mapping ON

Select to pause boundary recording. It is advisable that you stop your vehicle before selecting this button. This is to avoid any gaps appearing in the boundary map on your display.

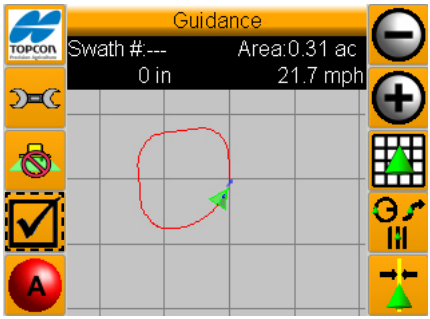


Figure 7-11. Close Boundary End points

This icon ☑ will appear when you are within 50 meters of the start point. Selecting ☑ will draw a straight line between your end points to complete your boundary. Alternatively, you can drive your vehicle to within 5 meters of the start point and the boundary will close itself automatically.

NOTICE

NOTICE

The Boundary perimeter must be greater than 100 meters before it can be closed

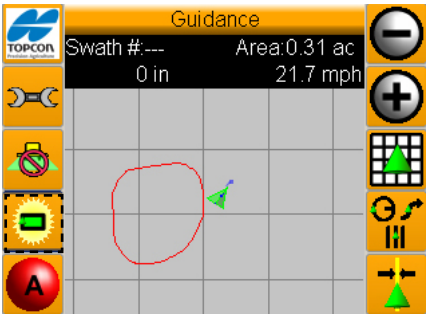


Figure 7-12. Create New Boundary File

Select ▭ if you have completed your boundary and want to create a new boundary file. This button will store your currently displayed boundary and create a new empty boundary file. This way you can create multiple boundary maps one after the other.

a5. Zoom Out

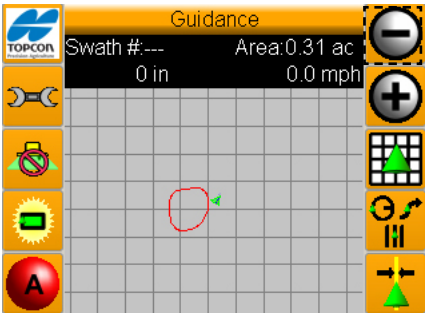


Figure 7-12. Zoomed out overhead view

This button is for zooming out of the ***Guidance*** screen. Zooming out helps you get a wider view of your map as you are drawing it on your ***Guidance*** screen.

a6. Zoom In

Figure 7-13. Zoomed in Overhead View

This button is for zooming into the ***Guidance*** screen. Zooming in helps you to get a closer view of your map as you are drawing it on your ***Guidance*** screen.

a7. Change Viewing Perspective

There are 3 main views that you can select from and they are Overhead view, North Up and Perspective.

Overhead View

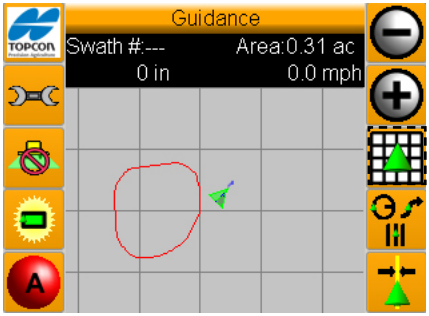


Figure 7-14. Overhead View

This gives you a top down view of your vehicle and map.

North Up

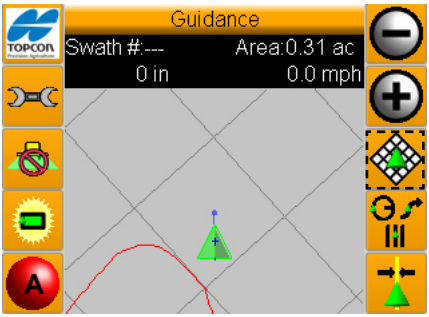


Figure 7-15. North Up View

North Up is similar to overhead view, except that your vehicle is always facing North relative to the screen

Perspective

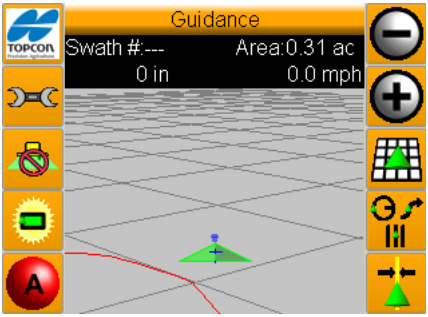


Figure 7-16. Perspective View

Perspective view allows you to view your virtual map as you might see your path from behind the vehicle.

a8. Select Guidance Pattern screen

Select to access the ***Select Guidance Pattern*** screen.

This screen will allow you to select a Guidance pattern to help guide your vehicle as you move across a given field.

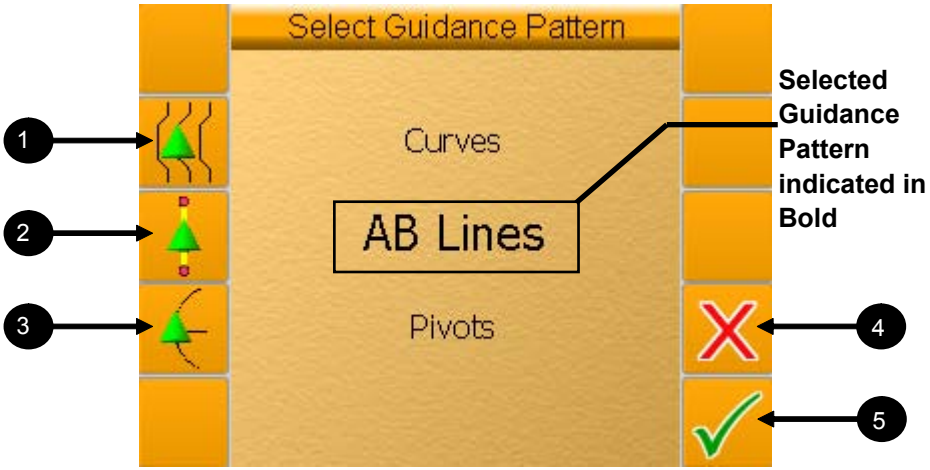


Figure 7-17. Select Guidance Pattern screen

1. Select to select Curves (Contour) Guidance pattern
2. Select to select AB Lines Guidance pattern
3. Select to select Pivots Guidance pattern
4. Select to cancel the selection and return to the ***Guidance*** screen
5. Select to accept the selection. If accepted, you will be taken to a screen similar to the one shown in figure 7-18.

This screen appears when a Guidance pattern is accepted. Here you will be able to save, edit, delete or import a Guidance pattern file.

Figure 7-18. File Selection screen

6. Select **New** to create a new guidance pattern file. This is usually done when creating a boundary or after a boundary has been created.

7. Select a file and select **Edit** to rename an existing file.

8. Select a file and select **Delete** to delete an existing file.

9. Select to load a file from a USB thumbdrive. When this option is selected, you will be taken to another file selection screen similar to the one above. Select a file and select the green arrow button to import the selected file to the ***File Selection*** screen (Figure 7-18).

10. Select **Find** to locate only AB Line guidance patterns with GPS coordinates within 2km of your current GPS location. Find can only be used to locate AB Lines guidance patterns.

11. Select the up and down arrow buttons to select a file

12. Note - This button only appears when AB lines is selected as the guidance pattern. Selecting will take you to another screen that will allow you to manually enter the longitude and latitude coordinates for A and B (refer page 7-16).

13. Select to cancel the selection and return to the ***Guidance Pattern Selection*** screen.

14. Select to accept the selection and return to the ***Guidance Pattern Selection*** screen.

Saving Guidance Patterns for Future Use

Parallel Lines, Pivots and Curves can be set and saved for use in specific fields. These lines can then be recalled in future when performing another application job in the same field.

Creating and saving these lines can ONLY be done while the vehicle is on the field and a Boundary file or Job file has been created. The only exception to this is the manual entry of A and B point coordinates.

Line

Creating an AB line can be done in either one of two ways. You can either select an A and a B point while you are on your field and your GPS is active or you can can enter the coordinates of the A and B points manually. This is done by creating a new AB line file and selecting item 12 on figure 7-18. You will then be taken to a screen similar to as shown in figure 7-19.

Follow the instructions on page 7-16 to manually enter A and B point coordinates.

Figure 7-19. Manually setting AB points screen

1. Select and enter the co-ordinates for the Point A Latitude
2. Select and enter the co-ordinates for the Point A Longitude
3. Select and enter the co-ordinates for the Point B Latitude
4. Select and enter the co-ordinates for the Point B Longitude
5. Instead of entering coordinates for the B point, you can select the heading in degrees after the A point is selected
6. Select to place the first point of the parallel run line.
7. Select to place the second point.
8. Return to ***Select Guidance Pattern*** screen without making any changes.
9. Save changes and return to ***Guidance*** screen

Refer to page 10-5 for more information on creating and saving AB Lines.

Curves

Select the curve option and begin driving around your field.

Curves are replicas of the previous runline, and can only be saved if coverage mapping is active.

Saving and recalling the curve guidance pattern is the same as saving and recalling the parallel lines, with the exception that there are no A/B points, and that coverage mapping must be ON.

Pivots

Select the Pivot option and drive the pivot track.

Once sufficient data has been gathered within one lap, a circle is drawn on the screen. The size of the circular guidance path will depend on the vehicle's distance from the pivot point. Eg. The circular guidance path will be small when the vehicle is close to the pivot point and large if the vehicle is far from the pivot point.

Saving and recalling pivot templates is the same as saving and recalling AB Lines, with the exception that there are no A/B points, and the coverage mapping must be ON.

a9. Nudge

The nudge button is used to compensate for GPS drift. Selecting this button will move AB Line and Pivot guidance patterns to the position of the GPS Antenna on the vehicle.

b. Guidance Setup Screen

Select to access the ***Guidance Setup*** screen.

This section will provide you with an introduction to the ***Guidance Setup*** screen.

Figure 7-20. Guidance Setup Screen

Label	Description
a	Returns you to the Guidance screen
c	Accesses the GPS Settings screen
b1	Accesses the Adjust GPS Look Ahead Distance screen
b2	Accesses the Units and Time Settings screen
b3	Accesses the Select Language screen
b4	Accesses the Implement Setup screen
b5	Accesses the GPS Antenna Location Setup screen
b6	Accesses the Enter the LED Spacing screen
b7	Accesses the Coverage Sense Setup screen

b1. Adjust GPS Look Ahead Distance

Select to access the ***Adjust GPS Look Ahead Distance*** screen.

This screen allows you to adjust the GPS Look Ahead distance. This is the length of the indicator stick on the front of the vehicle icon.

Figure 7-21. Enter Look Ahead Distance Screen

Refer to Appendix A, Page A-8 for instructions on using the Numerical Keypad. 20m (840 inches) is the recommended minimum look ahead distance.

1. Select twice to clear the current look ahead distance.
2. Select to undo the last entry.
3. Select to enter decimal point values.
4. Select to cancel the changes and return to the ***Guidance Setup*** screen.
5. Select to accept the changes and return to the ***Guidance Setup*** screen.

b2. Units and Time Settings

Select to access the ***Units and Time Settings*** screen.

This screen allows you to adjust the measurement units and the time settings.

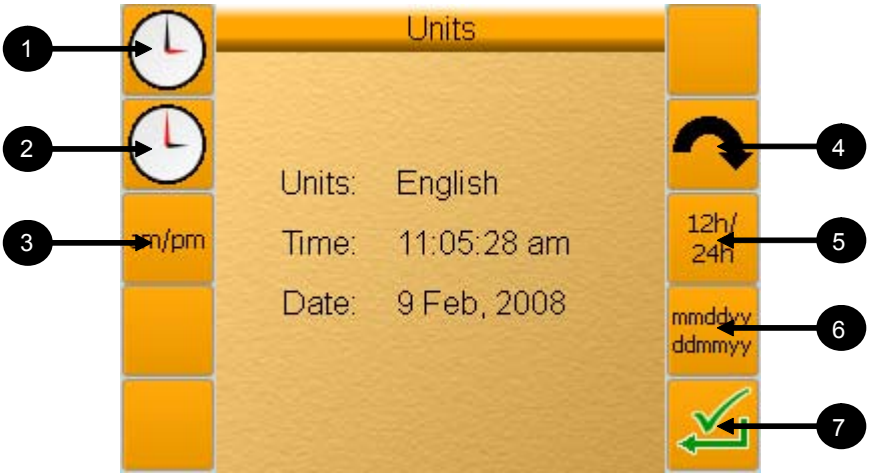


Figure 7-22. Units and Time Settings Screen

Refer Appendix A, Page A-8 for instructions on using the Numerical Keypad.

1. Select to set the hour.
2. Select to set the minutes.
3. Select to switch between am and pm.
4. Select to switch between Metric and English units.
5. Select to switch between 12-hour clock display and 24-hour clock display.
6. Select to switch between day/month/year date display

7. Select to accept the changes.

NOTICE

The clock has to be set the first time the PCS100 is turned on with a GPS signal. The clock only needs to be re-set if the PCS100 is taken to a different time zone.

b3. Select Language

Select to access the ***Select Language*** screen (figure 7-23).

This screen allows you to select the language that will be applied to all text in the console.

Figure 7-23. Select Language Screen

1. Select on the up and down arrows to highlight the language you want to select.

2. Select to cancel your selection and return to the ***Guidance Setup*** screen.

3. Select to confirm your selection and you will be returned to the disclaimer screen in the language you selected.

b4. Implement Setup

Select to access the ***Implement Setup*** screen.

This screen allows you to adjust the swath width, the inline offset, the implement offset and the implement width.

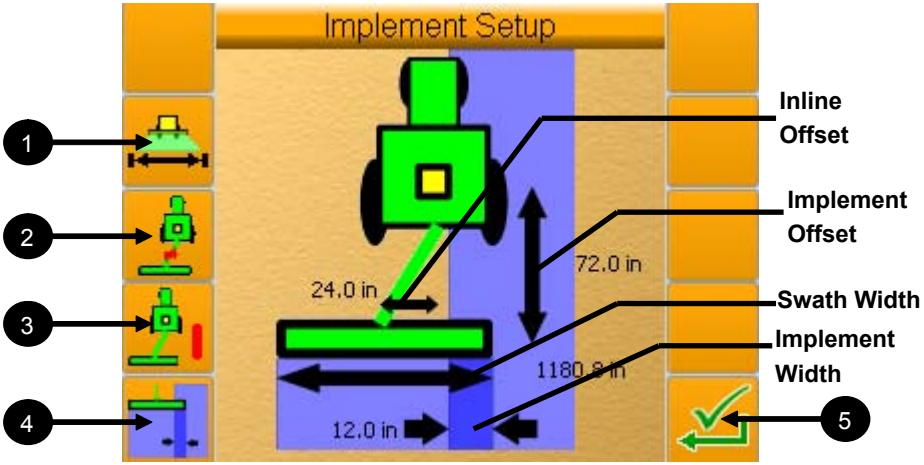


Figure 7-24. Implement Setup Screen

Refer Appendix A, Page A-8 to use the Numerical Keypad.

1. Select to enter the Swath Width.
2. Select to enter the Inline Offset. An offset to the left of the centerline is negative and to the right is positive.
3. Select to enter the Implement Offset. An offset to the rear of the fixed wheel is positive and to the front is negative.
4. Select to enter the Overlap value. Positive value for overlap and negative value for underlap.

Refer to Appendix D for a schematic showing you how to take the above measurements.

5. Select to accept the settings.

b5. GPS Antenna Location Setup

Select to access the ***GPS Antenna Location Setup*** screen.

This screen allows you to enter the GPS Antenna position in relation to the vehicle.

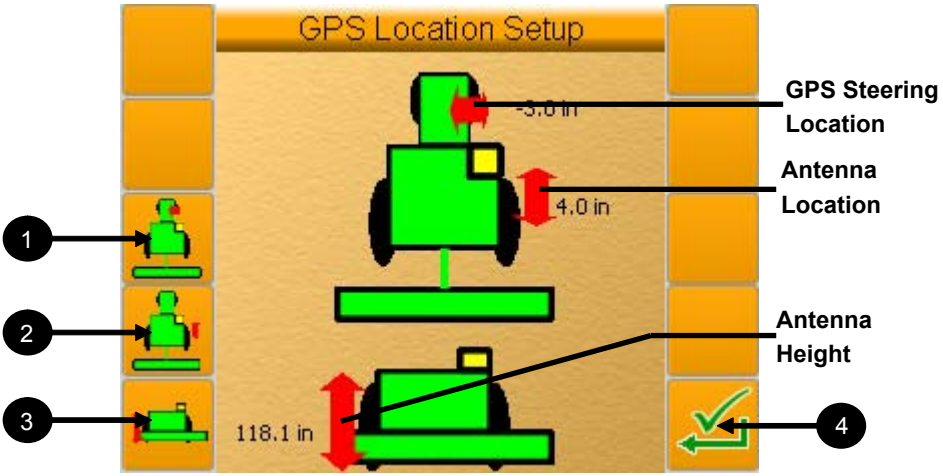


Figure 7-25. GPS Antenna Location Setup Screen

Refer Appendix A, page A-8 to use the numeric keypad.

1. Select to enter the GPS Steering Location. If the GPS antenna is offset to the left of the centerline, the value is negative.If it is to the right, the value is positive.

2. Select to enter the Antenna Location. The antenna position will be negative when it is in fornt of the rear axle and positive when it behind the rear axle

3. Select to enter the Antenna Height.

Refer to Appendix D for a schematic showing you how to take the above measurements.

4. Select to accept the settings.

b6. Enter LED Spacing Screen

Select to access the ***Enter LED Spacing*** screen.

There are 19 LEDs on the lightbar. The lightbar is used to visually indicate the position of the center of your vehicle from the center of a guide line. For example, if you enter a value of 7 inches, and the center of your vehicle drifts 21 inches to the left of a guide line, then 3 LEDs on the left of your lightbar will be lit.

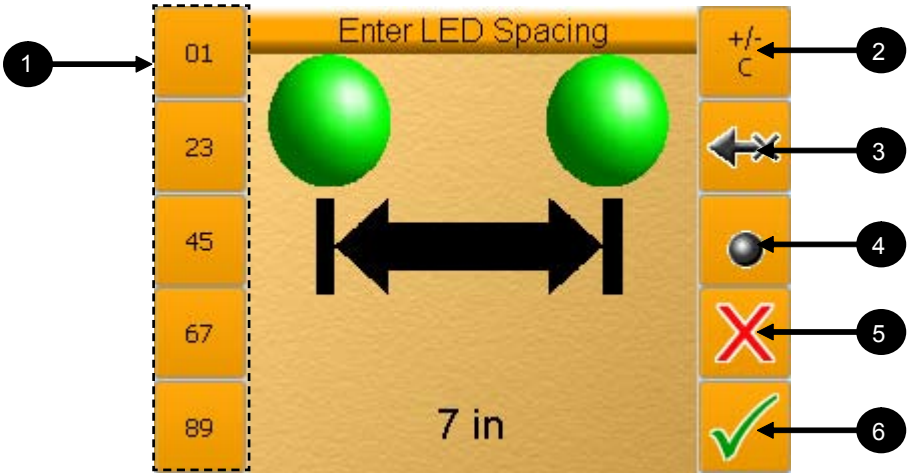


Figure 7-26. Enter LED Spacing Screen

Refer Appendix A, page A-8 for instructions on using the Numerical Keypad.

1. Select twice to clear the current LED spacing.
2. Select to undo the last entry.
3. Select to enter decimal point values.
4. Select to cancel the changes and return to the ***Guidance Setup*** screen. .

5. Select to accept the changes and return to the ***Guidance Setup*** screen

b7. Coverage Sense Setup screen

Select to access the ***Coverage Sense Setup*** screen.

This section will allow you to set the logging parameters for the coverage map.

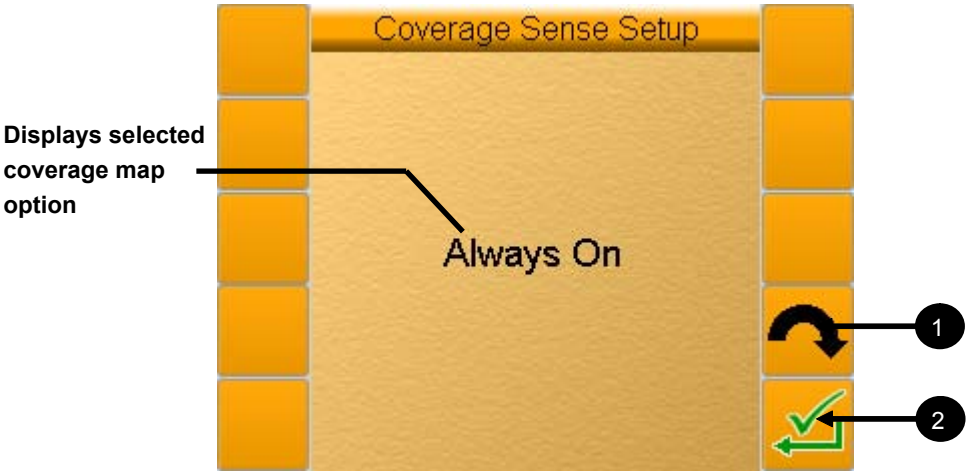


Figure 7-27. Coverage Sense Setup

1. Select to choose among the 3 available coverage map options. The options available are explained below:

    - Always On - When this is set, the coverage map will be mapping at all times, even if no product is being applied onto the field and can only be turned off from this screen. This option is usually set when you would want to create a map to track the area your vehicle has covered on a given field.

- Manual - When this is set, you will be able to manually turn mapping ON and OFF from the main console by selecting the ***Coverage Mapping ON/OFF*** button.

- Switched - This option is set when the PCS100 is connected to a signal voltage that automatically engages mapping, only when the signal voltage is detected. The source of this signal can range from a manual switchbox within the tractor cabin to voltage coming from the sprayers when they are switched on.

Switched Option - Extended details and example

Positive voltage is applied to the input harness when the implement is enabled to activate mapping automatically. When this voltage is OFF, mapping is turned OFF.

2. Select to accept the changes and return to the ***Guidance Setup*** screen

c. GPS Settings Screen

Select to access the ***GPS Settings*** screen.

This section will provide you with an introduction to the features found on the ***GPS Settings*** screen.

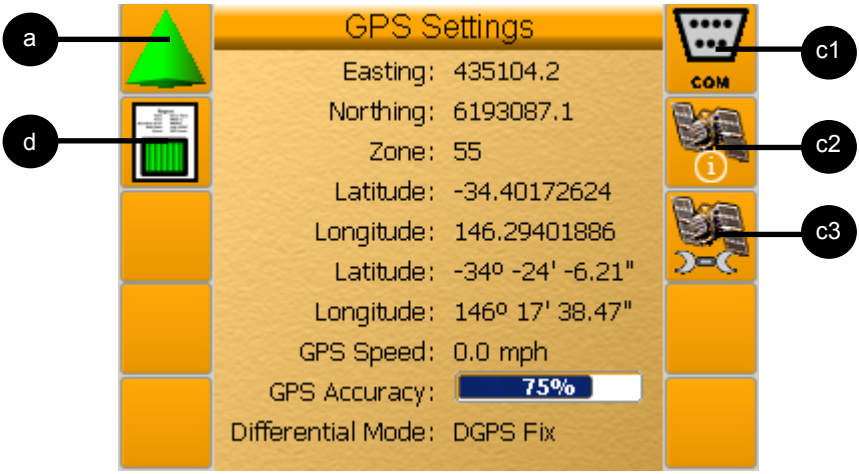


Figure 7-28. GPS Settings Screen

Label	Description
a	Returns you to the Guidance screen
d	Accesses the Job Setup screen
c1	Accesses the Serial Port and Baud Rate Setup screen.
c2	Displays GPS information
c3	Accesses the GPS Antenna selection screen

- Eastings/Northings - is a measurement (in meters) relating to position within the Zone
- Zone - The world is divided up into areas so that the Eastings/ Northings can be shown at a relatively lower number (digit)

- Latitude/Longitude - Indicates the position of the GPS antenna on the earths surface.

- GPS Speed - Shows the actual speed of the vehicle moving across the ground.

- GPS Accuracy - By combining the number of satellites, HDOP, PDOP the relative accuracy of the GPS is shown on the bar graph: 0 = no GPS received, 100% = excellent signal and accuracy

- Differential Mode - Indicates what GPS is connected and its status. There are items that can be displayed in this section:

    1. Invalid
    2. GPS Fix
    3. DGPS Fix
    4. PPS Fix
    5. RTK
    6. Float RTK
    7. Estimated
    8. Manual Input
    9. SBAS

Data settings for 'Other' GPS Receivers

GGA 0.2 seconds (5Hz)
VTG 0.2 sec (5Hz)
ZDA 15 seconds

RS-232 communications
19200 baud rate (preferred) 8 data bits, No Parity, 1 Stop bit (19200, 8N1)

c1. Serial Port Setup Screen

Select to access the ***Serial Port Setup*** screen. Here you can set the baud rate for the GPS.

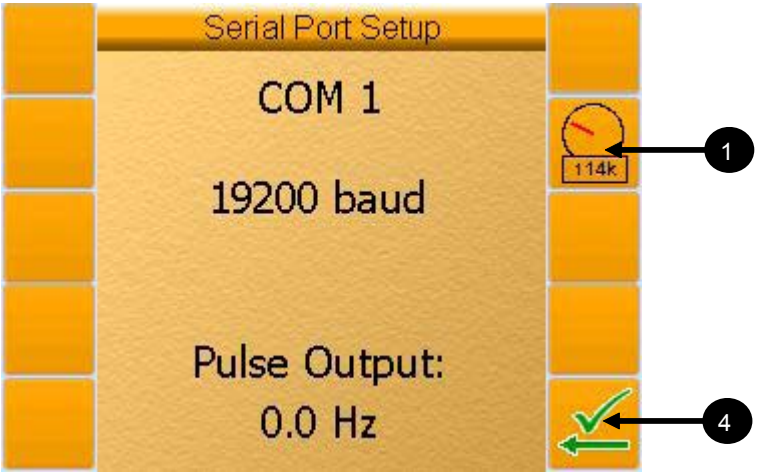


Figure 7-29. Serial Port Setup

1. Select to access the ***Baud Rate Selection*** screen.

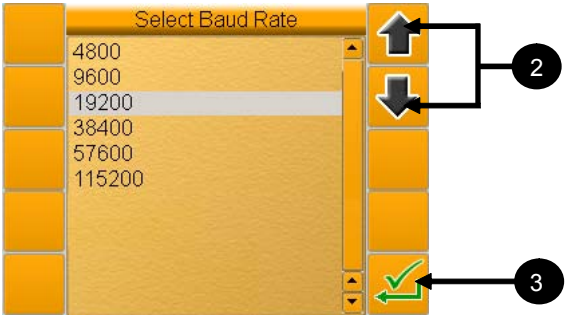


Figure 7-30. Select Baud Rate

2. Select the up and down arrow buttons to select a baud rate.

NOTICE

NOTICE

The default Baud Rate is 19200 for the AGE-1 and AGE-2 antennas.

3. Select to accept the selection and return to the ***Serial Port Setup*** screen.

4. Select again to accept the selection and return to the ***GPS Settings*** screen.

c2. Display GPS information

Select to access the ***Display GPS Information*** screen.

Figure 7-31. GPS Information

The information displayed is the number of detectable satellites, the correction age in seconds and also the HDOP. The lower the value of your HDOP, the more accurate your GPS reading will be.

This is the reason why the GPS Antenna must be positioned on the roof without any obstructions with a clear view of the sky. Any obstruction of the GPS Antenna could cause your HDOP value to increase, leading to innacurate GPS position readings.

Select to return to the ***GPS Settings*** screen.

c3. GPS Antenna Selection

Select to access the ***GPS Antenna Selection*** screen. Select **AGE-2** or **AGE-1** if you are using the supplied antenna from the Kit. Select **Other** if you are using a different GPS antenna from these two.

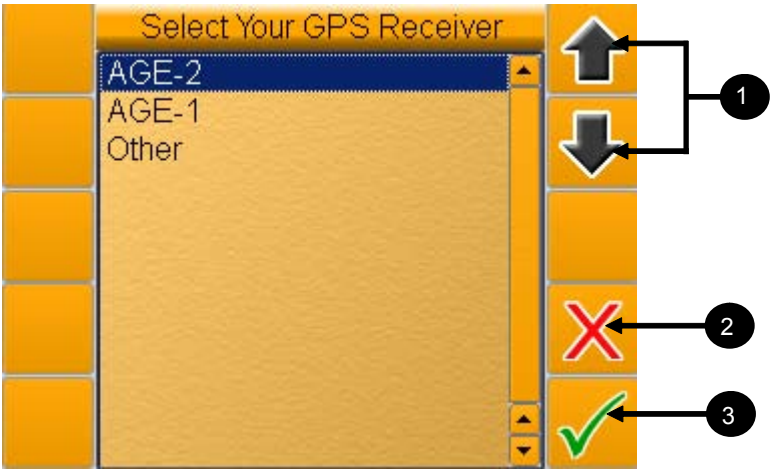


Figure 7-32. Select Your GPS Receiver

1. Select the up and down arrow buttons to select a GPS receiver.

2. Select to cancel the selection and return to the ***GPS Settings*** screen.

3. Select to confirm the selection. A different screen will appear depending on your selection.

If the GPS receiver you selected and confirmed was **Other**, then you will be returned to the ***GPS Settings*** screen. Refer to page 7-28 for information on GPS Settings if you are using a receiver different from the AGE-1 or AGE-2

Select Correction System

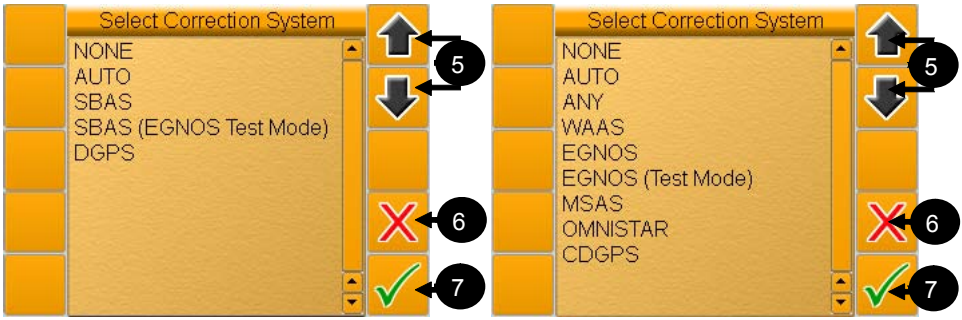


Figure 7-33. Correction System options for AGE-2 (Left) & AGE-1 (Right)

Correction System	Description
NONE	Will not use any correction
AUTO	Let the receiver select the best SBAS satellite
ANY	Will use any SBAS satellite
WAAS	Use 'Wide Area Augmentation System'
EGNOS	Use the 'European Geostationary Navigation Overlay Service'
EGNOS (Test Mode)	Use the 'European Geostationary Navigation Overlay Service' test network
MSAS	Use 'Multi-functional Satellite Augmentation System
Omnistar	Use Omnistar Virtual Base Station (VBS) correction
CDGPS	Use the 'Canadian Differential GPS' Correction System

4. Your correction system will be limited to the GPS receiver that you selected. Select the correction system that suits your required application.

5. Select the up and down arrow buttons to select a Correction System.

6. Select to cancel the selection and return to the select ***GPS Receiver*** screen.

7. Select to confirm the selection and you will be returned to the ***GPS Settings*** screen.

Select Region - Omnistar

This option is available if **Omnistar** is selected as the correction system.

Figure 7-34. Select Region Omnistar screen

Select your location from the list. If the location is not listed, you will have to select **Custom...** to enter the frequency in manually

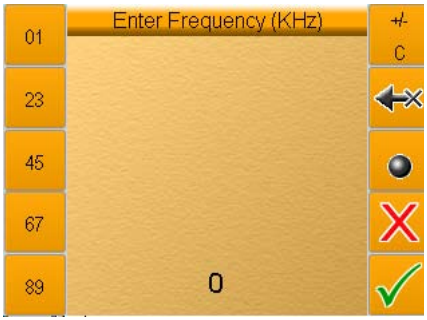


Figure 7-35. Enter Frequency

Refer Appendix A, Page A-8 to use the Numerical Keypad (Figure 7-35).

To activate Omnistar you will require the OSN (Omnistar Serial Number) which can be found on the label of the AGE-1 receiver.

For additional information on Omnistar frequencies, please visit : www.omnistar.com.au/techinfo/freq.html

Select Region - CDGPS

This option is available if **CDGPS** is selected as the correction system.

Figure 7-36. Select Region CDGPS screen

Select your location from the list. If the location is not listed, you will have to select **Custom...** to enter the frequency in manually

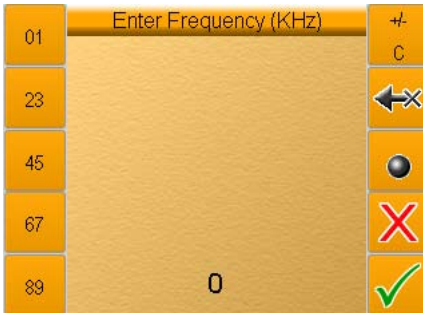


Figure 7-37. Enter Frequency

Refer Appendix A, Page A-8 to use the Numerical Keypad (Figure 7-37).

d. The Job Setup Screen

Select to access the ***Job Setup*** screen.

Figure 7-38. Job Selection Screen

Label	Description
a	Returns you to the Guidance screen
e	Accesses the System Memory and Diagnostics screen
d1	Create Coverage Report of Active Job
d2	Accesses the Job Selection screen
d3	Clears the current Job
d4	Accesses the Boundary Selection screen
d5	Accesses the Enter Notes Screen

d1. Create Coverage Report

Before you select this button, you must ensure you have a thumbdrive plugged into your PCS100 console. Selecting this button will generate a coverage report of your active Job file. The report is saved as a pdf file and placed in a folder named 'Reports' on your thumbdrive. The information contained in this report include the duration of your Job and also the total area that you mapped. Refer to page 9-9 for more information on creating a coverage Report.

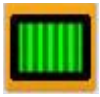
d2. Access Job Selection Screen

Select this button to enter the ***Job Selection*** screen. There you can create new job files and select, edit or delete existing job files. Refer to Chapter 9 for information on starting a Job.

d3. Clear Current Job

Select this button to clear Job data on a selected file. This clears all coverage map information and resets the job totals (shown on Job Setup screen) on a file without deleting the file itself.

d4. Access Boundary Selection Screen



Select this button to enter the ***Boundary Selection*** screen. Here, you can create new boundary files or select, edit or delete existing boundary files. Refer to Chapter 8 for information on creating Boundaries.

d5. Access Enter Notes screen

Select this button to access the enter notes screen. Here you can enter notes regarding your current Job.

Refer to Appendix A, page A-8 and A-9 for information on how to use the Alphanumeric type pad.

e. System Memory and Diagnostics

Select to access the file memory and diagnostics screen.

Here you will be able to see how much memory is available on the main drive, the USB thumbdrive (if connected) and the File System.

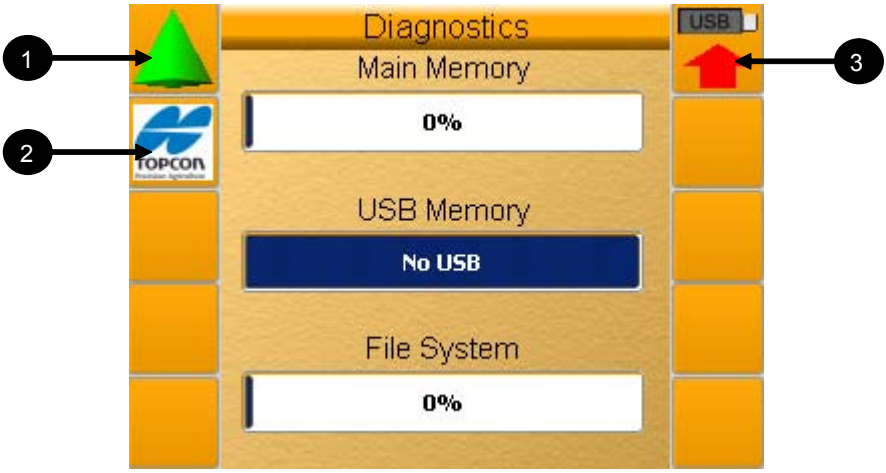


Figure 7-39. System Memory and Diagnostics Screen

1. Select to return to the ***Guidance*** screen.
2. Select to return to the ***Main*** screen.
3. Select to export your Job, Boundary and Guidance Path files directly to a thumbdrive.

Memory Warnings

There are two important warnings that are related to memory. These warnings are:

1. Your memory resources are getting low
2. Your memory resources are exhausted

Follow steps 1 and 2 if you encounter the first warning during a job:

1. Stop your current job and create a new Job file

2. Continue your coverage from the new Job file

If the warning still appears after doing these 2 steps, follow up with steps 3 and 4:

3. Access the diagnostics screen and backup your files to a thumbdrive (Page 11-1 and 11-2)

4. Delete all unecessary Job, Boundary and Guidance Pattern files from the PCS100 console to free up the Main Memory.

CAUTION

Failing to follow the above steps when the first warning occurs will eventually lead to the appearance of the second warning. You will then be unable to perform coverage mapping at all and you will have to perform steps 3 and 4 in order to continue your current Job.

f. Day or Night Mode

The colour of Day and Night Mode will vary depending on the selected colour scheme.

Figure 7-40. Main Screen in Day Mode

1. Select to switch to Night Mode (this will also dim the lightbar, buttons, and the screen).

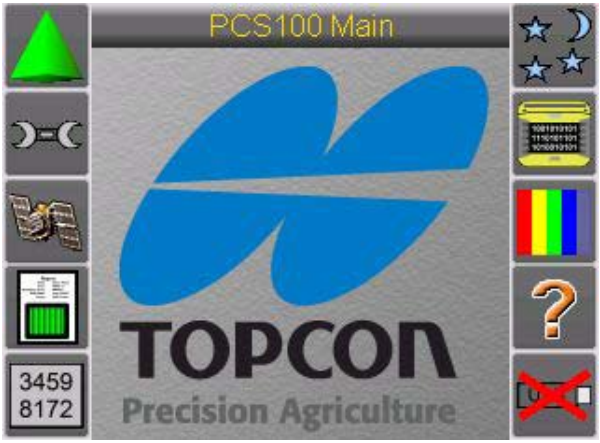


Figure 7-41. Main Screen in Night Mode

2. Select to switch back to Day Mode.

g. Reprogram the Console

To upgrade the software in the console, a USB thumbrive containing the update files will need to be plugged into the console.

When this has been done, select to update the software on the console.

h. Change the Colour Scheme

Select to access the Colour Scheme menu.

Here you will be able to adjust the colour scheme of most of the items on the screen and also apply a textured background for the main display area.

i. About Button

Select to view information about the PCS100.

You will be able to view the Hardware Part Number, the Serial Number and the Software Version.

j. Safely Remove the Thumbdrive

Select to safely remove the thumbdrive from the USB port. Wait for the screen to say that it is safe to remove the USB before you remove the USB thumbdrive.

WARNING

Failure to select the safely remove thumb drive button before removing the thumb drive could lead to permanent damage and potential loss of data to your thumb drive.

Configuration Checklist

Now that you are familiar with the console, below is a checklist of the items that you must configure to use the PCS100 properly.

Conduct the setup procedure in the order listed below:

Initial Setup

1. Units and Time Settings Page 7-20
2. Select Language Page 7-21

GPS Setup

3. GPS Antenna Selection Page 7-31

   If selecting Omnistar, record your OSN here

4. Serial Port Setup screen Page7-29

General Setup

5. Look Ahead Distance Page 7-19
6. Implement Setup Page7-22
7. GPS Antenna Location Setup Page 7-23
8. LED spacing Page 7-24

Creating a Boundary

This chapter will explain how to create a boundary of your field using the PCS100 Guidance software.

Creating or loading a boundary should be your initial step before starting a job. Doing this will help you determine the shape and size of your field and how best to proceed with the job. Boundaries can also be saved and used over again in future and for different applications.

Procedure

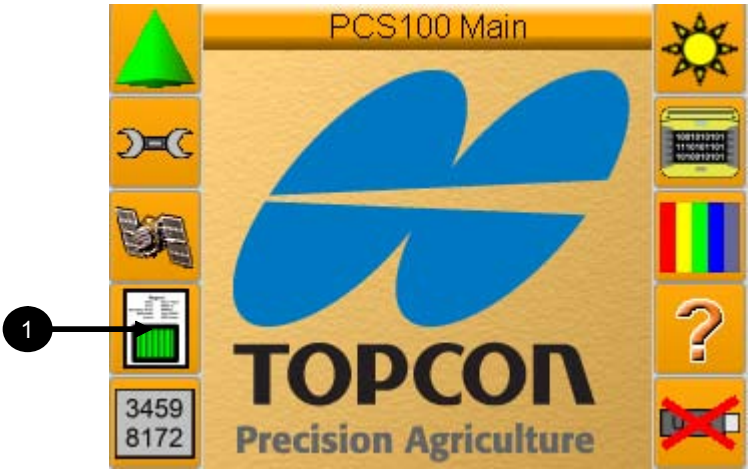


Figure 8-1. PCS100 Main

Before starting this procedure, setup your software as required according to the configuration checklist in Chapter 7 on page 7-42.

1. Select to access the ***Job Setup*** screen

Figure 8-2. Job Setup screen

2. Select to access the Boundary Selection screen.

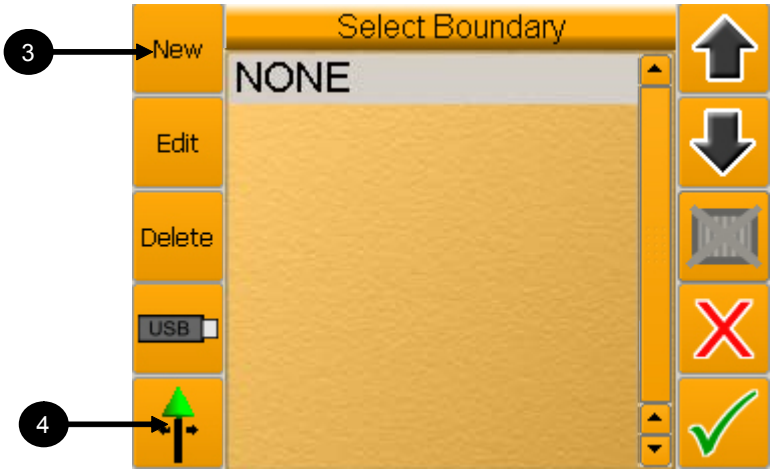


Figure 8-3. Boundary Selection screen

3. Select **New** to start a new boundary file.

4. Refer to Page 8-7 for information on how to set the boundary offset.

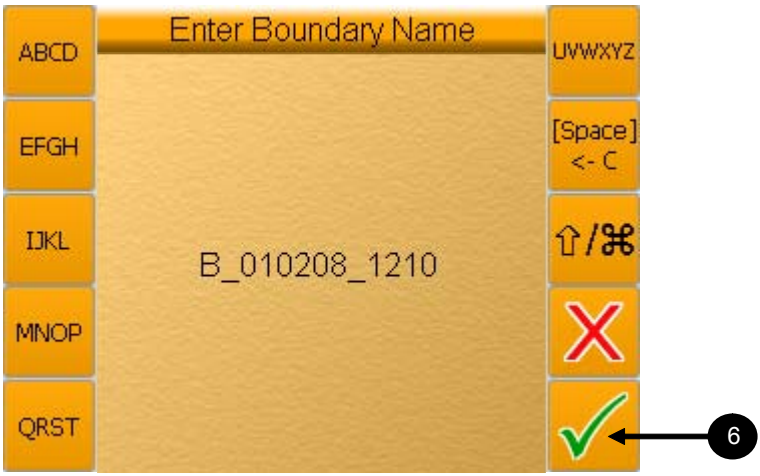


Figure 8-4. Enter Boundary Name

5. You can enter a new boundary name or use the generated name. Refer to Appendix F for information on the generated File Name. Refer to Appendix A, Page A-8 and A-9 for instructions on using the Alphanumeric pad.

6. Select to accept the name and return to the Boundary Selection screen.

Figure 8-5. Job Setup screen displaying boundary

7. Select to return to the guidance screen.

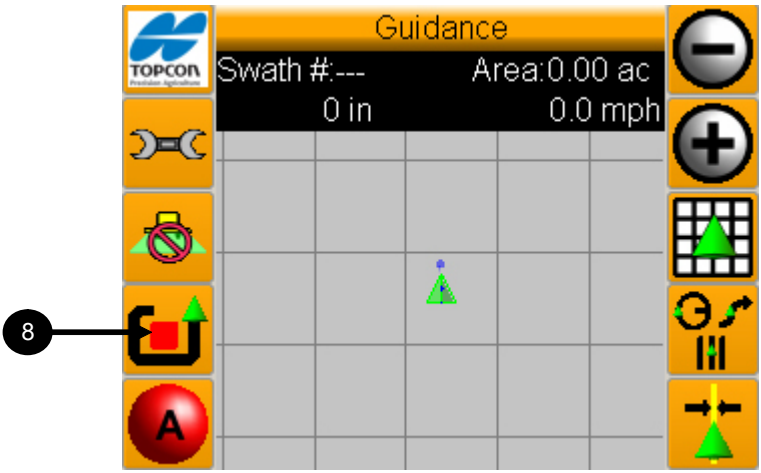


Figure 8-6. Drive to starting point

8. Drive to the desired starting point on your field. Select when you want to start drawing your boundary.

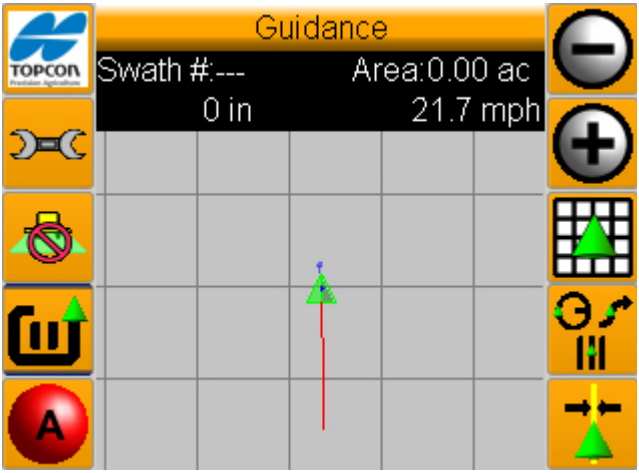


Figure 8-7. Start drawing your boundary

9. Drive off, and a line should appear on the screen next to or behind your vehicle icon (figure 8-7). This line represents your field boundary.

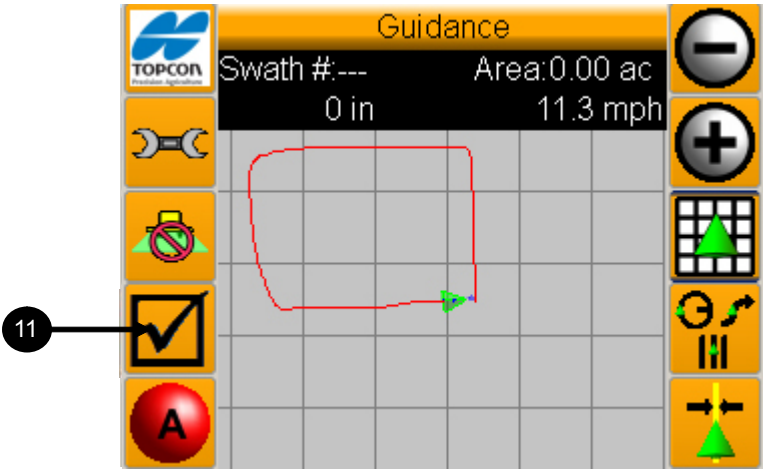


Figure 8-8. Boundary icon will change to tick icon

10. Watching the line on your screen, drive your vehicle around the boundary of your field until the lines are almost closed. When you near the starting point of your boundary, the boundary icon will change to this ☑ (figure 8-8).

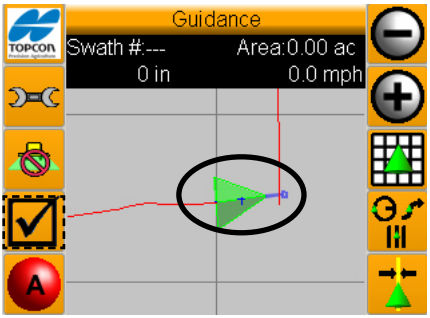


Figure 8-9. Approaching Start of Boundary

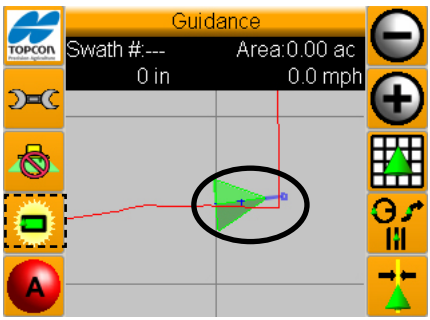


Figure 8-10. Close the Boundary Line

11. Select ☑ to close the boundary line. A straight line will be drawn from the end point to the starting point of the boundary line.

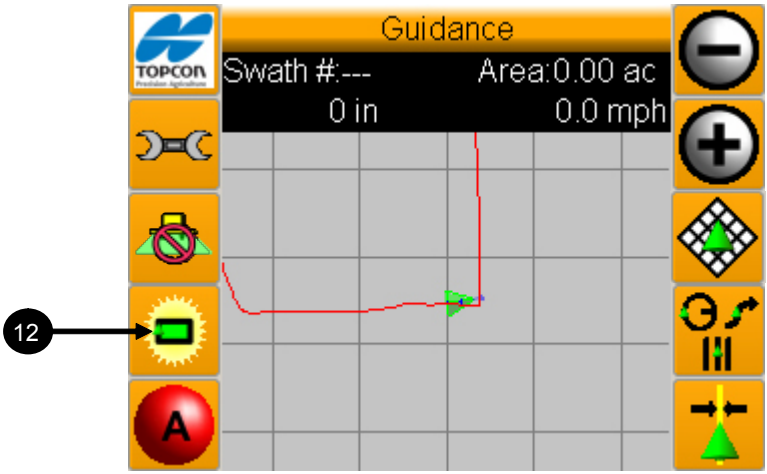


Figure 8-11. Boundary mapping completed

12. Select to save the current boundary and create a new file for the next boundary mapping. The saved file will close, and the new boundary file (that will be automatically named) will be opened.

Figure 8-12. Create a new file to start a new boundary map

13. Now you can either repeat the above procedure on another field to create and save more field boundaries, or you can start a new Job file.

14. Refer to chapter 9 for instructions on how to start a Job.

Boundary Offset

The boundary offset is used so you can draw your boundary line at a specific distance on the left or right of your vehicle icon. As such, if you were driving with the center of your vehicle directly over your field boundary, your offset would be zero. Sometimes it is only possible to drive next to your field boundary due to a fenceline.

This is when you would use boundary offset. There offset values will be positive or negative depending on the direction you are travelling around your field. This section will explain how to set your boundary offset.

Figure 8-14. Access Boundary Offset screen

1. Select to access the ***Boundary Offset*** screen.

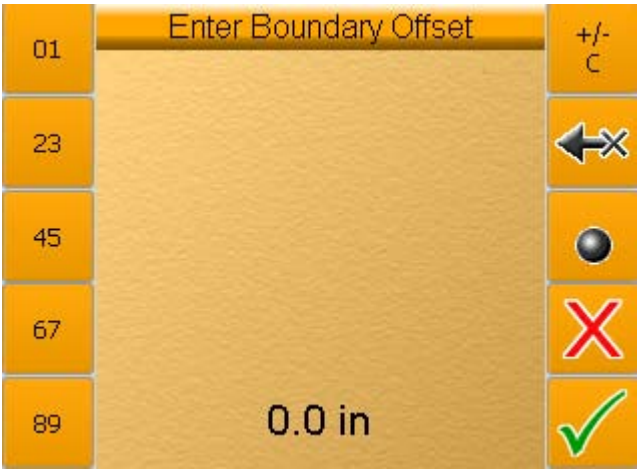


Figure 8-15. Enter Boundary offset value

2. Enter a value for the offset. Use a positive number for an offset to the right of your vehicle and a negative number for an offset to the left of your vehicle. Normally this value is set at slightly more than half the swath width of your vehicle so that the boundary line is drawn just slightly over the edge of the implement (see figures 8-16 and 8-17)

   Refer to Appendix A, Page A-2 for information on how to use the Numeric keypad .

3. Select ✓ to confirm your selection.

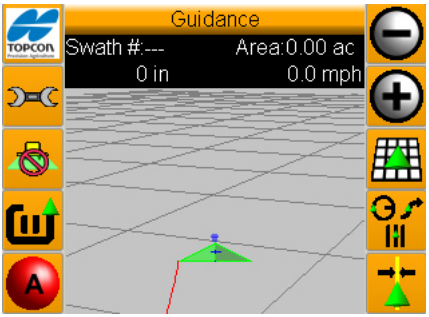


Figure 8-16. Negative offset (left)

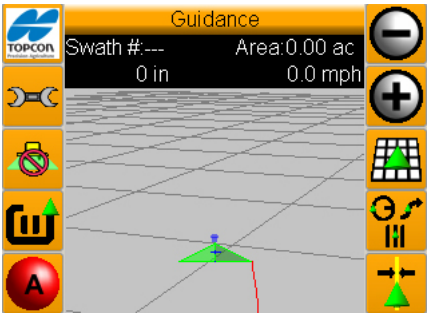


Figure 8-17. and positive offset (right)

Recalling a Boundary

After a field boundary is created, you may want to recall it for use in different jobs and field applications. This section explains how to recall a boundary file for use in a new Job.

NOTICE *NOTICE*

The guidance screen displays your vehicle icon based on the GPS coordinates of your vehicle. Your saved field boundary also has GPS coordinates based on the location of the actual field. Because of this, your vehicle needs to be near the actual field for the field boundary to be displayed properly on the display screen.

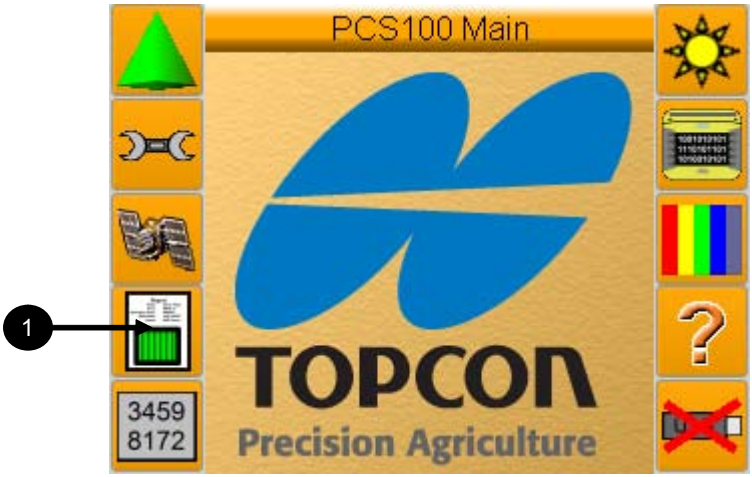


Figure 8-18. Access Job Setup screen

If using an old Boundary file in a new Job, ensure that the Job file is created first before loading the Boundary file.

1. Select to access the ***Job Setup*** screen.

Figure 8-19. Access Boundary Selection screen

2. Select to access the ***Boundary Selection*** screen.

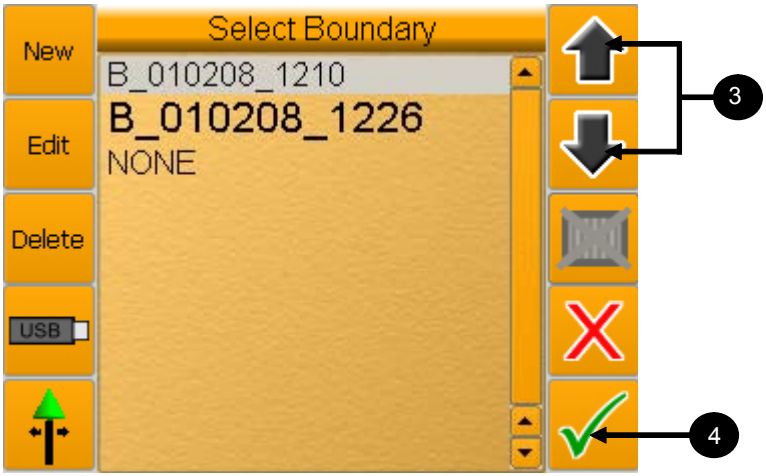


Figure 8-20. Select a boundary file

3. Select the up and down arrow buttons to select a Boundary file.

4. Select to confirm your selection and return to ***Job Setup*** screen.

Figure 8-21. Return to Guidance screen

5. Select to return to the ***Guidance*** screen.

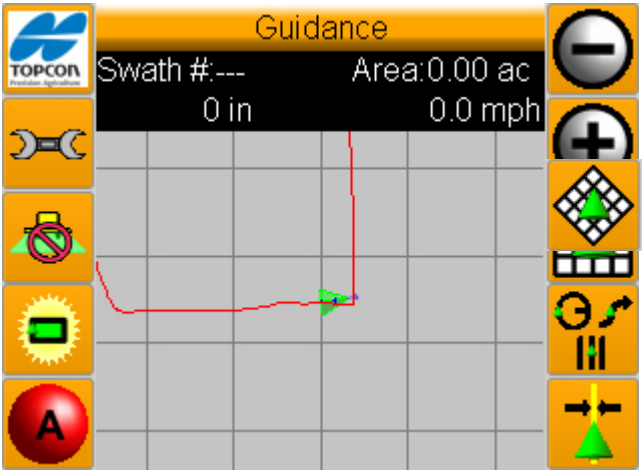


Figure 8-22. Boundary is displayed on Guidance screen

You will see your Boundary displayed on the screen.

Notes:

Starting a Job

This chapter will explain how to start a job to perform coverage mapping using the PCS100 Guidance software.

You must create or select a Job before you can begin coverage mapping. It is recommended practice to create a new Job file for every new field. Boundary files can also be attached to specific Jobs by selecting the boundary file when a Job is active. Refer to chapter 7 for information on how to setup your vehicle before beginning a job.

Procedure

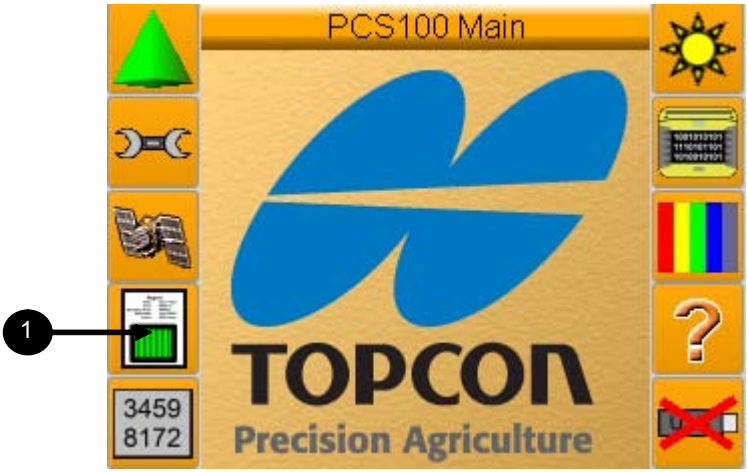


Figure 9-1. Access Job Setup screen

Before starting this procedure, setup your software as required according to the instructions outlined in Chapter 7.

1. Select to access the ***Job Setup*** screen.

Figure 9-2. Access Job Selection screen

2. Select **Select Job**

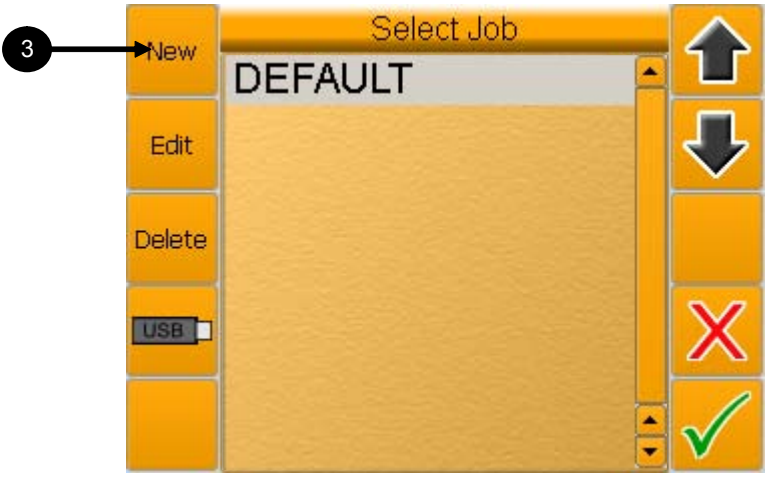


Figure 9-3. Create a new Job file

3. Select **New** to create a new application job file.

Figure 9-4. Enter a new job name or use generated name

4. Enter a new job name (optional) or use the generated name. Refer to Appendix F for information on the generated File Name. Refer to Appendix A, page A-8 to use the Alphanumeric keypad.

5. Select to accept the name and return to the ***Job Setup*** screen.

Figure 9-5. After Job is selected return to Guidance screen

6. Select to return to the ***Guidance*** screen

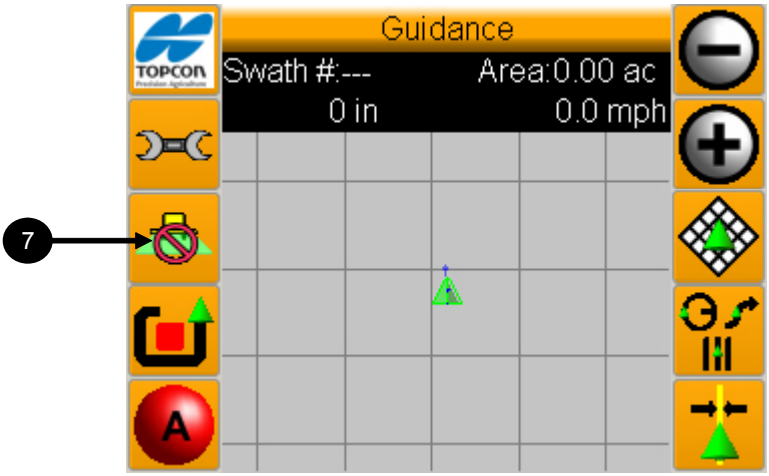


Figure 9-6. Start Coverage Mapping

7. Follow the instructions below depending on which coverage sense method you are using. Refer to page 7-6 and 7-25, Chapter 7:

   - Always On - Just drive off and the coverage map will begin drawing

   - Manual - Select to turn coverage mapping ON and drive off. The icon will change to while coverage mapping is active.

   - Switched - Enable the positive input source to turn the coverage map ON and drive off. The icon will change to while coverage mapping is active.

8. With the coverage mapping on, drive around your field until you have mapped the areas you wish to cover. To assist you, you may select between 3 guidance patterns (refer Chapter 10). These will create lines that you can follow to allow more accurate coverage of your field.

   Refer to Chapter 10 for information on how to select and apply a Guidance Pattern.

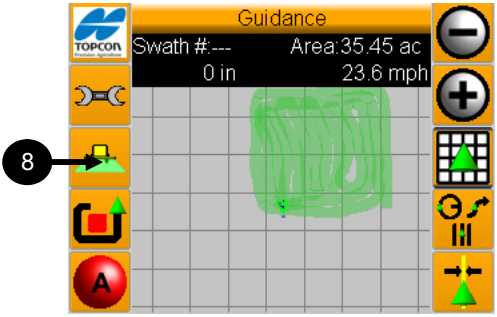


Figure 9-7. Coverage mapping is ON

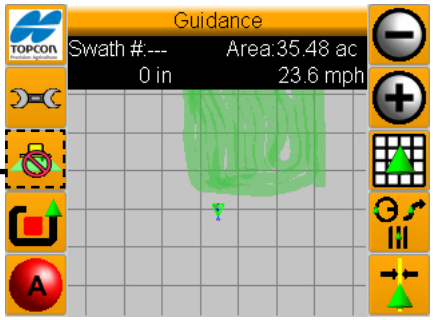


Figure 9-8. Coverage mapping is OFF

8. Select to turn off the coverage mapping. The icon will change to display indicating that mapping is OFF.

The coverage map is now saved to the Job File that you created and can be recalled at any time.

Recalling a Job

After a Job is completed, you may want to recall the coverage map for viewing purposes. This section explains how to recall a job file.

NOTICE

NOTICE

The guidance screen displays your vehicle icon, based on the GPS coordinates of your vehicle. Your saved coverage map (Job File) also has GPS coordinates based on the location of the actual field. Because of this, your vehicle needs to be near the actual field for the coverage map to be displayed properly on the screen.

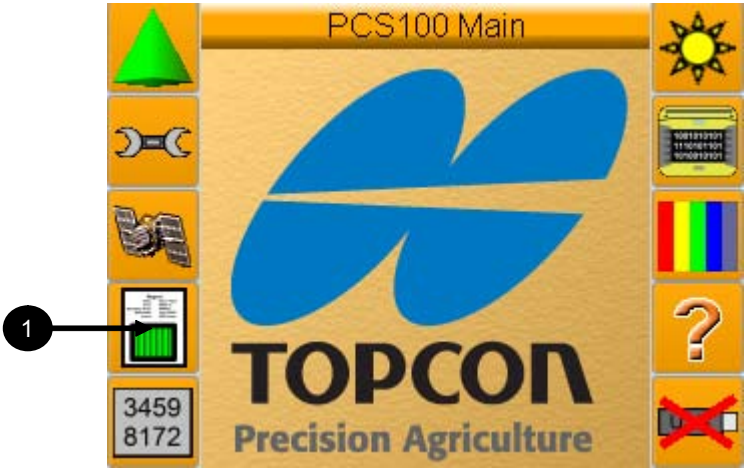


Figure 9-9. Access Job Setup screen

1. Select to access the ***Job Setup*** screen.

Figure 9-10. Access Job Selection screen

2. Select ***Select Job*** to access the ***Job Selection*** screen.

Figure 9-11. Select a Job file

3. Select the up and down arrow buttons to select a Boundary file.

4. Select to confirm your selection and return to the ***Job Setup*** screen.

Figure 9-12. Return to the Guidance screen

5. Select to return to the Guidance screen

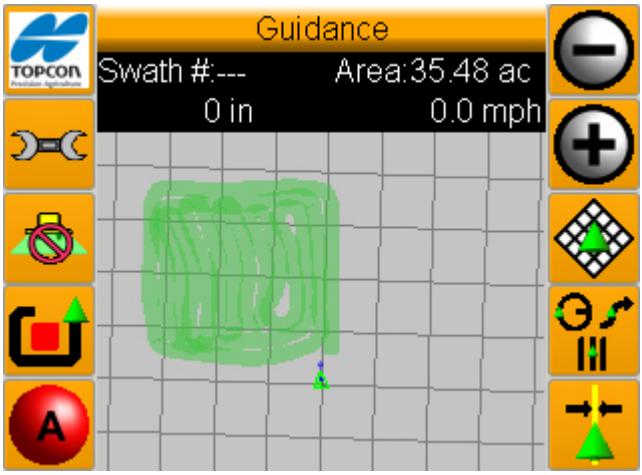


Figure 9-13. The coverage map in the Job file will be displayed

You will see your coverage map (created during the Job) displayed on the screen.

Creating a Coverage Report

After finishing a coverage map, you can create and export a pdf file with details of your coverage. Your coverage report will contain the following items:

- Job Name
- Starting and End Date
- Total Area covered
- Total Hours to completion
- Total Hours coverage mapping active
- Distance covered
- Boundary Name
- Boundary Area
- Notes

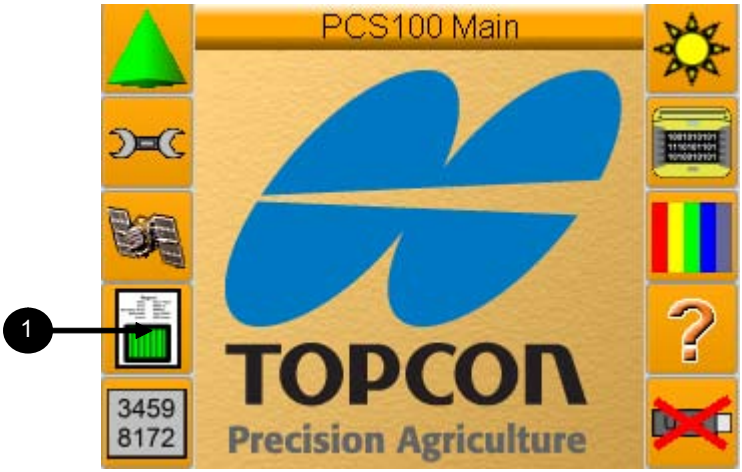


Figure 9-14. Access Job Setup screen

Make sure that you have a thumbdrive with enough file space inserted into the USB port on the front of the console before proceeding.

1. Select to access the ***Job Setup*** screen.

Figure 9-15. A job file must be active to create a job report

Ensure you have selected a Job file before proceeding.

2. Select to create a coverage report to be exported to thumbdrive.

Figure 9-16. Export in progress

Figure 9-17. Export completed

3. You should see the above screens. If the report export is successful, you will see the image on the right.

4. Select (Figure 9-17) to exit the screen. You will be returned to the Job Selection screen.

On your thumbdrive, the coverage map report will be located in a folder named ***Reports*** and will be in a pdf file format. Below is an example of what your coverage report would look like.

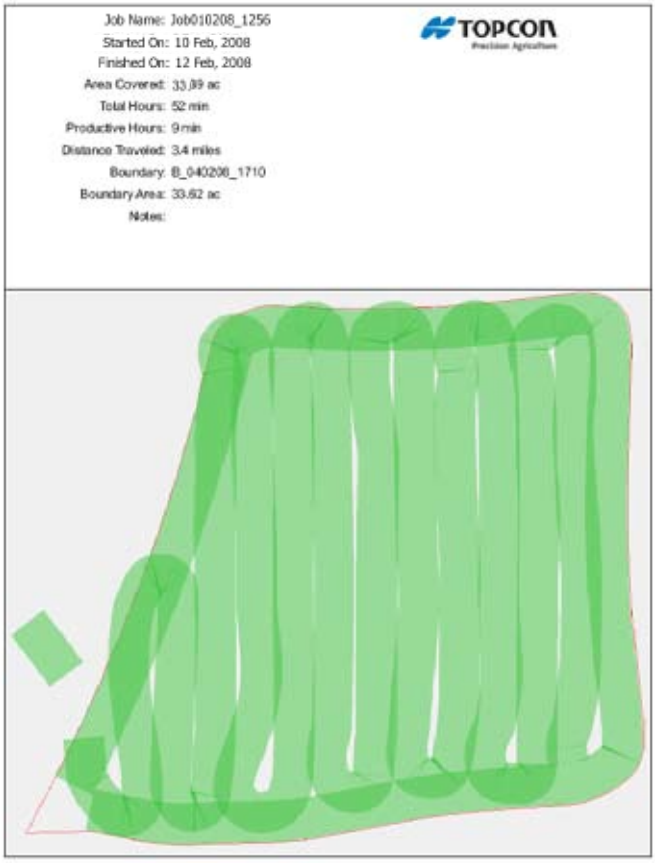


Figure 9-18. Example of Coverage Report

Notes:

Using Guidance Patterns

This chapter will explain how to create, use and save Guidance patterns that can be used over and over again in a specific field during a job.

There are 3 Guidance patterns that can be used and they are Curves, AB Lines and Pivots.

Curves

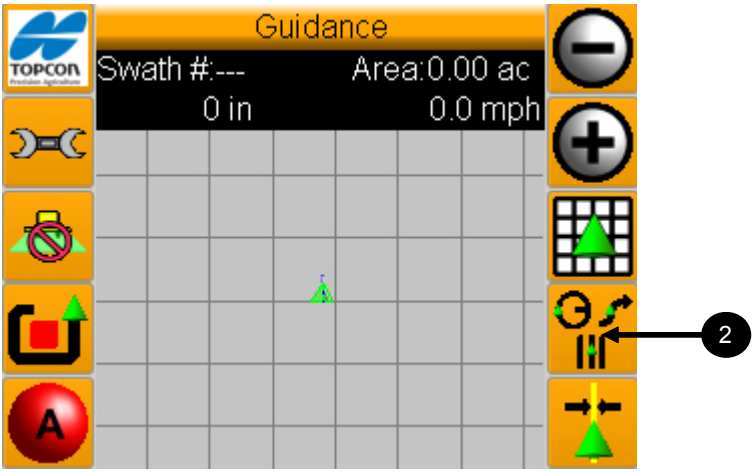


Figure 10-1. Access Guidance Pattern screen

1. Drive your vehicle the edge of the field where you want to draw your Curve line.

2. Select to access the ***Select Guidance Pattern*** screen.

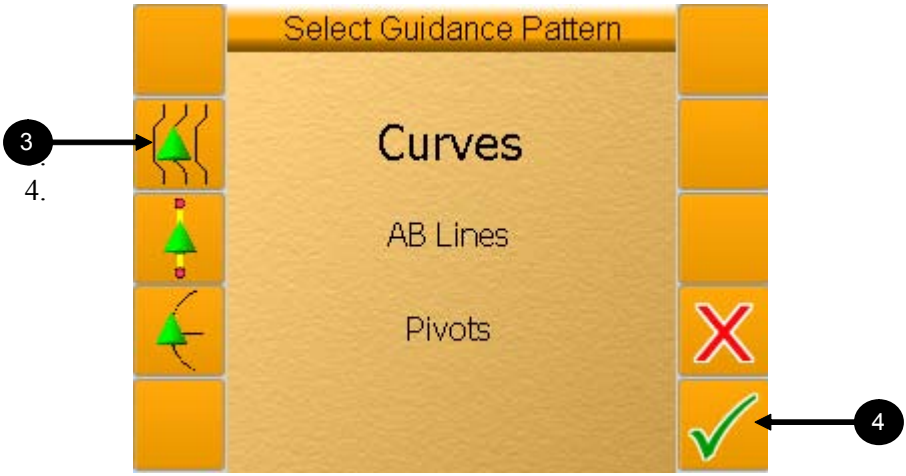


Figure 10-2. Select Curves Guidance pattern

5. Select (figure 10-2) to select Curves (Contour) guidance pattern.

6. Select (figure 10-2) to confirm your selection.

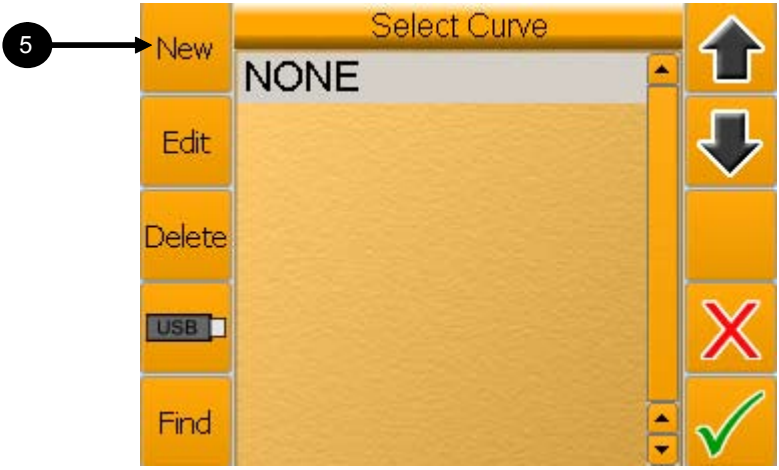


Figure 10-3. Create a new Curve file

7. Select **New** (figure 10-3) to create a new Curve Guidance Pattern file.

Figure 10-4. Enter a new file name or select default name

8. You can enter a new curve file name or use the generated name. Refer to Appendix F for information on the generated File Name. Refer to Appendix A, page A-8 to use the Alphanumeric keypad.

9. Select to confirm your selection.

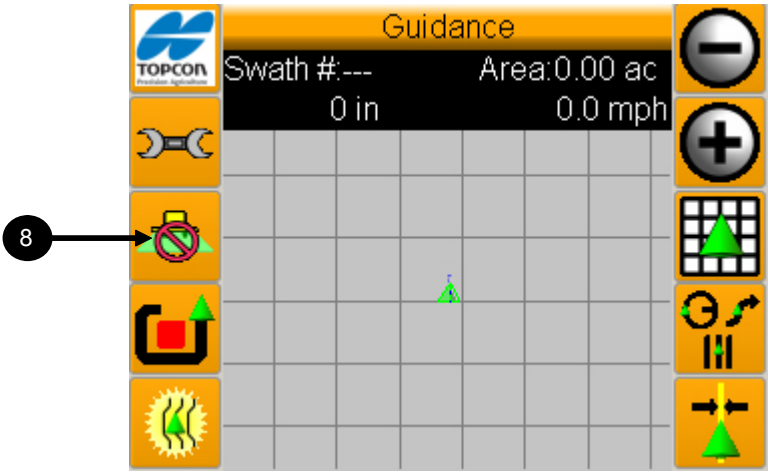


Figure 10-5. Start coverage mapping

10. Select to turn on coverage mapping and drive one lap around your field.

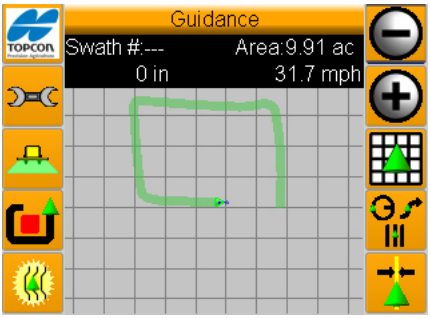


Figure 10-6. Perform 1st lap

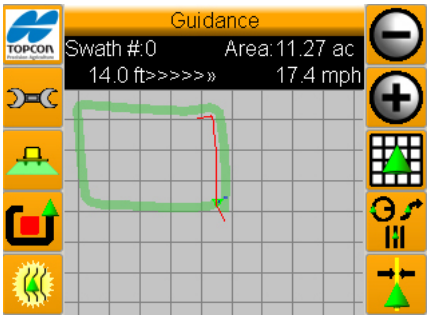


Figure 10-7. Curve line will appear

11. Curved lines will appear parallel to paths you have previously covered.

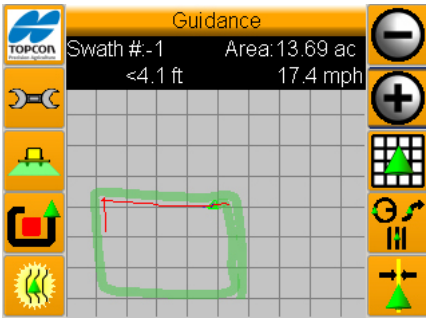


Figure 10-8. Another Curve line will appear at the next corner

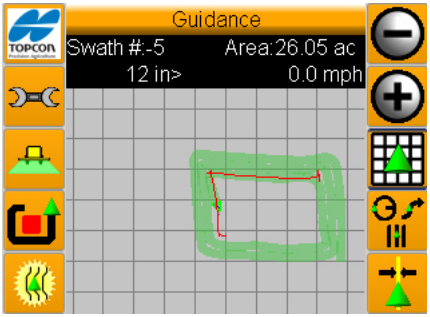


Figure 10-9. New Curve lines will appear based on previous coverage line

12. Follow these lines around your field to complete your coverage map in curve mode.

13. Note - Select at any time to close (and save) the current Curve file and create a new Curve file. The created Curve file will be named and loaded automtically so you can begin logging new curve lines right away. You can rename the created file by accessing the guidance pattern menu and selecting Curves.

AB Lines

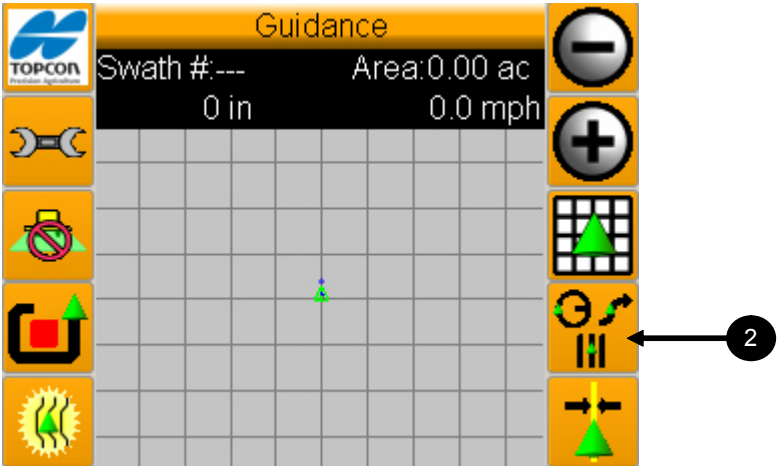


Figure 10-10. Access Select Guidance Pattern screen

1. Drive your vehicle to the edge of the field where you want to draw your AB Line.
2. Select to access the ***Select Guidance Pattern*** screen.

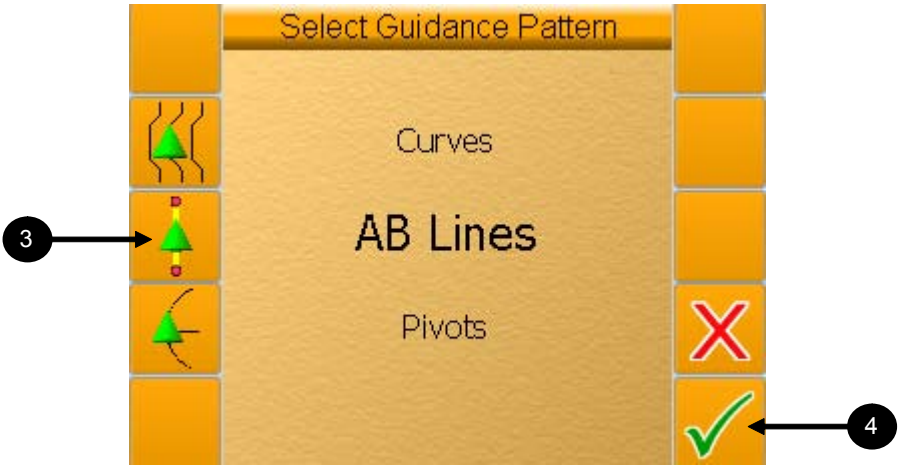


Figure 10-11. Select AB Lines Guidance pattern

3. Select to select AB Lines guidance pattern.

4. Select ✓ to confirm the selection.

Figure 10-12. Create a new AB Lines file

5. Select **New** to create a new AB Lines Guidance Pattern file.

Figure 10-13. Enter a new file name or select default name

6. You can enter a new AB Line file name or use the generated name. Refer to Appendix F for information on the generated File Name. Refer to Appendix A, page A-8 to use the Alphanumeric keypad.

7. Select to confirm your selection.

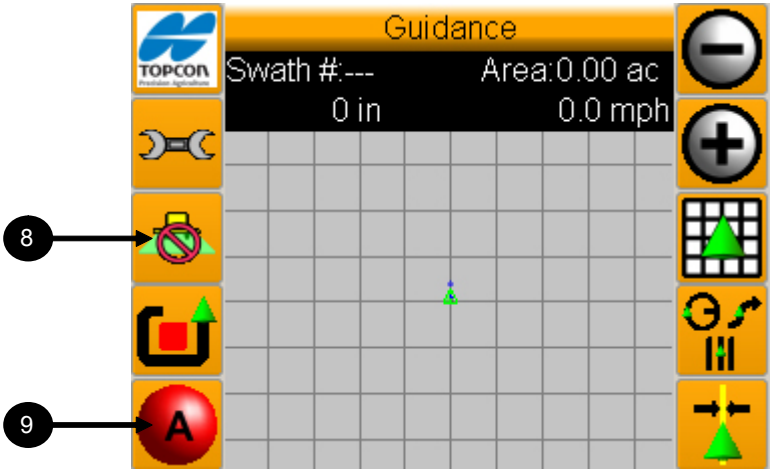


Figure 10-14. Start Coverage mapping

8. Select to turn on coverage mapping (figure 10-14).

9. Select to set the first point of the AB Line (figure 10-15).

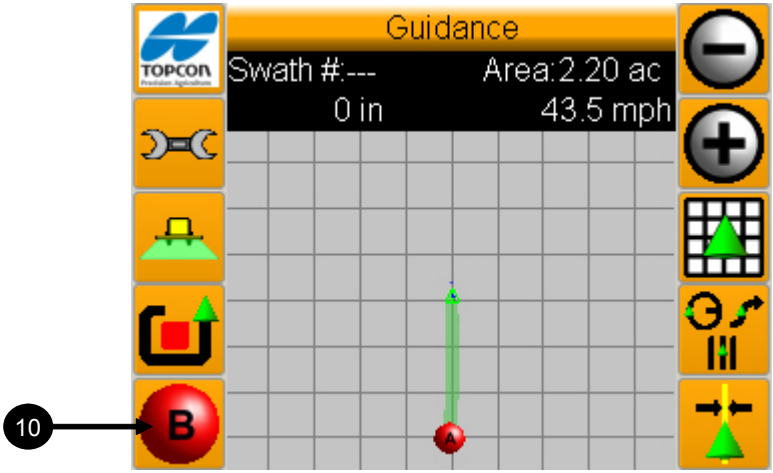


Figure 10-15. Set the first point of the AB line

10. Drive in a straight line until you reach the other end of your field and select to mark the second point of the AB Line.

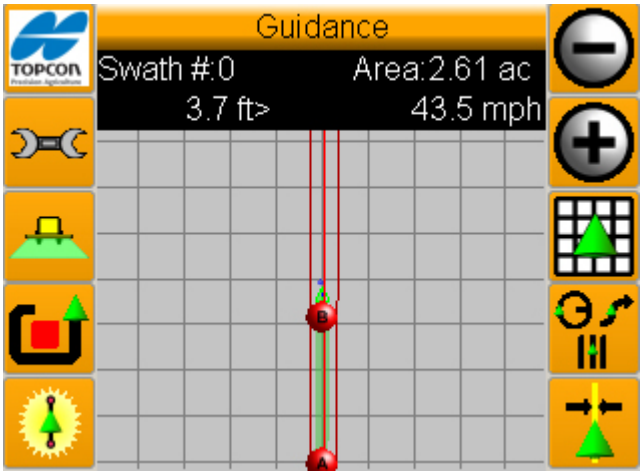


Figure 10-16. Set the second point of the AB line

11. A straight line will now appear (figure 10-16).

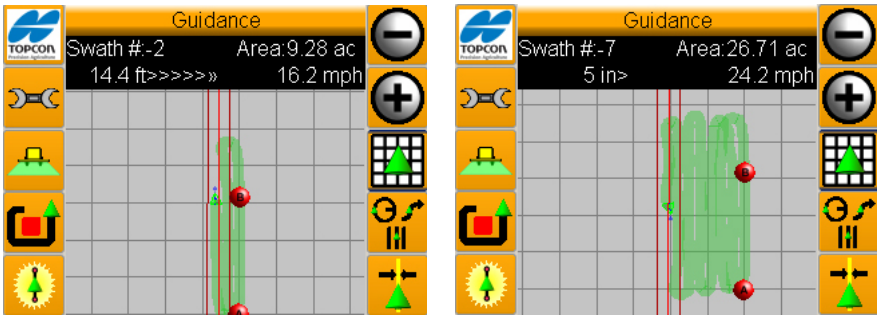


Figure 10-17. Follow the line up and down your field

12. Follow this line up and down across your field to complete the coverage map.

13. Note - Select at any time to close (and save) the current AB line file and create a new AB line file. The created AB line file will be named and loaded automtically so you can enter new AB points right away. You can rename the created file by accessing the guidance pattern menu and selecting AB Lines.

Pivot

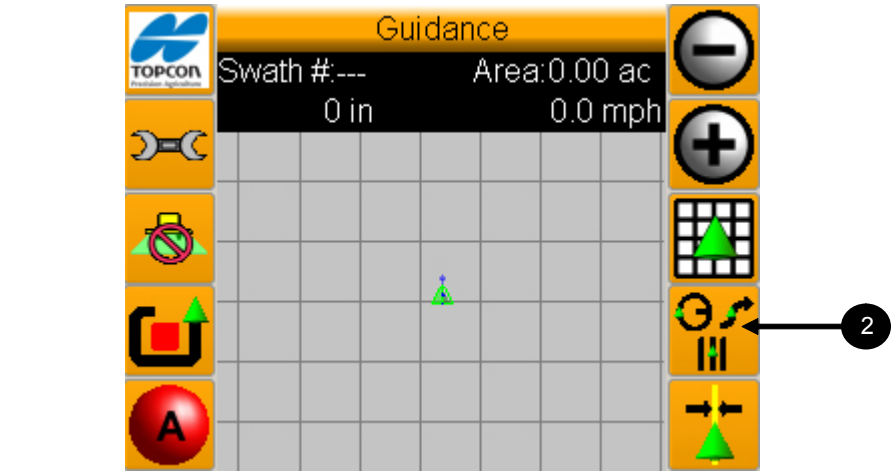


Figure 10-18. Access Select Guidance Pattern screen

1. Drive your vehicle the edge of the field where you want to draw your Pivot Line.
2. Select to access the Select Guidance Pattern screen.

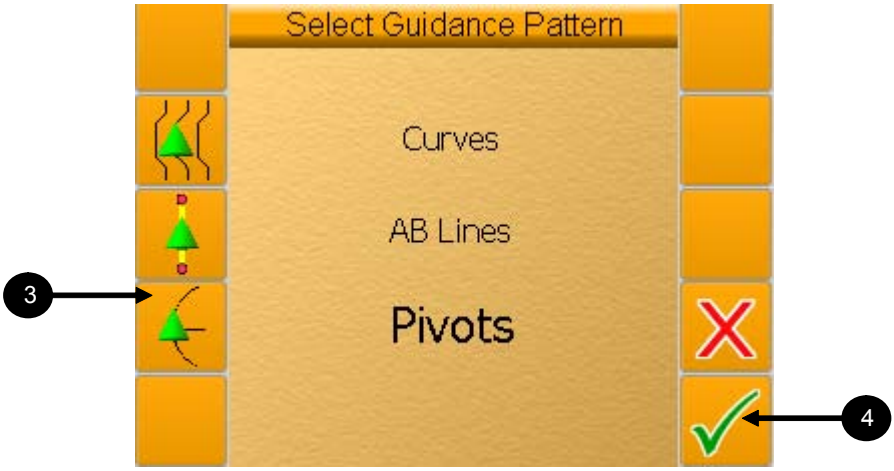


Figure 10-19. Select Pivots Guidance pattern

3. Select (figure 10-19) to select Pivots Guidance Pattern.

4. Select ✓ (figure 10-19) to confirm the selection.

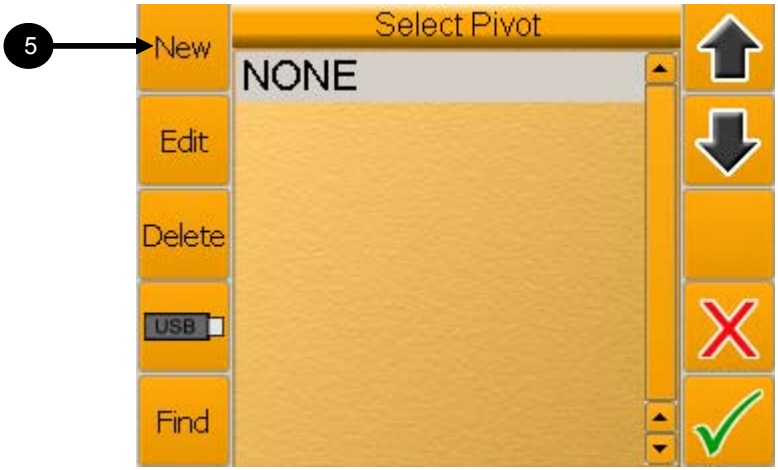


Figure 10-20. Create a new Pivot file

5. Select **New** to create a new Pivot Guidance Pattern file.

Figure 10-21. Enter a new file name or select default name

6. Enter a new pivot file name (optional) or use the generated name. Refer to Appendix F for information on the generated File Name. Refer to Appendix A, page A-8 to use the Alphanumeric keypad.

7. Select to confirm your selection.

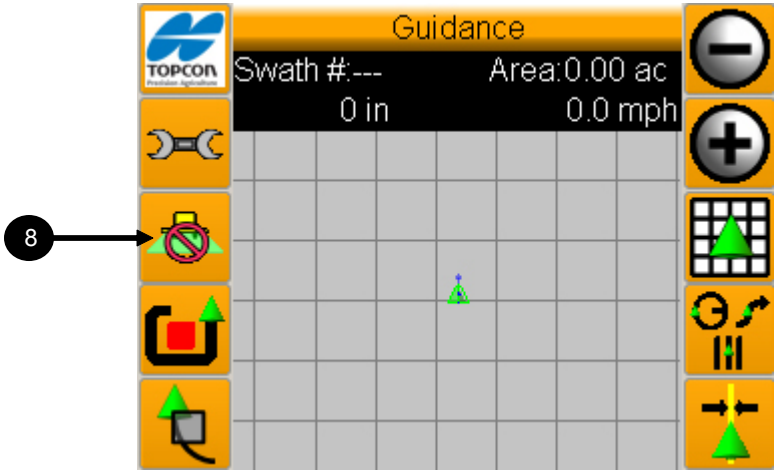


Figure 10-22. Start Coverage mapping

8. Select to turn on coverage mapping and drive off along a pivot curve.

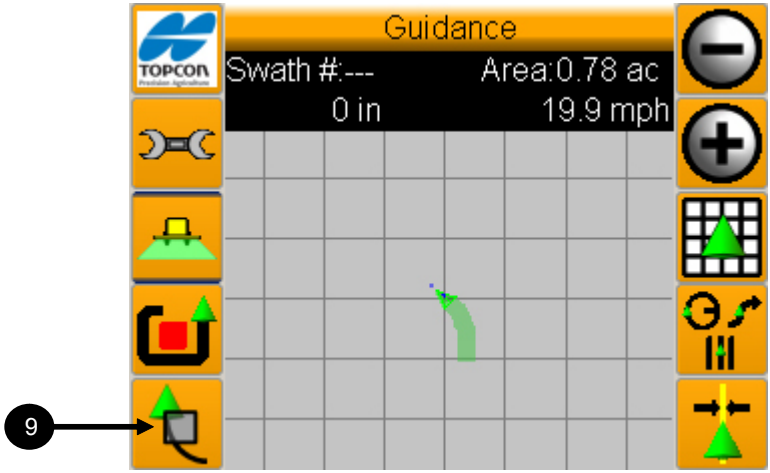


Figure 10-23. Start driving and activate pivot calculation

9. Select for the software to begin calculating the pivot of your vehicle. This icon will begin flashing red and grey and you will have to maintain your vehicle curve until the flashing stops.

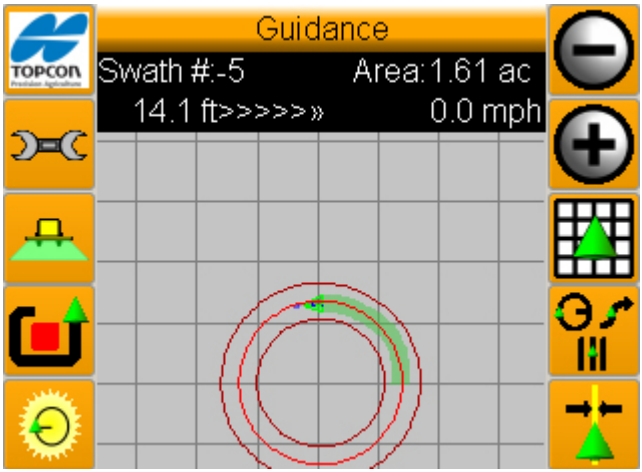


Figure 10-24. A red circle will appear when pivot point is determined

10. When the Pivot point has been determined a red circle will appear.

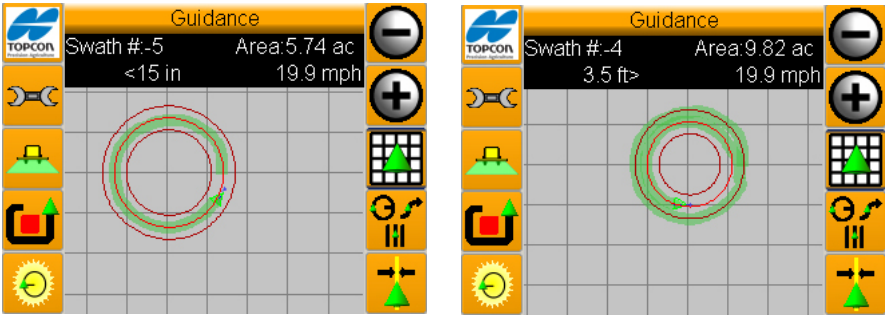


Figure 10-25. Follow the pivot line

11. Follow this line round and round to complete your coverage map (figure 10-25).

12. Note - Select at any time to close (and save) the current Pivot file and create a new Pivot file. The created Pivot file will be named and loaded automtically so you can begin calculating a new pivot right away. You can rename the created file by accessing the guidance pattern menu and selecting Pivots.

Recalling a Guidance Pattern

This section explains how to recall a Guidance Pattern that has been saved to be reused in a specific field.

NOTICE

NOTICE

Saved guidance patterns can only be reused in the field that they were originally created in. However, you may save as many Guidance Patterns as you want per field. This allows you to use multiple Guidance Patterns when mapping your field.

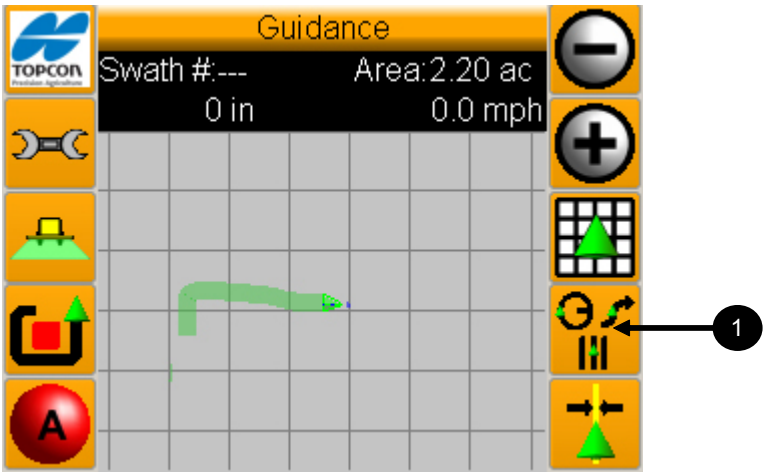


Figure 10-26. Access the Guidance Pattern screen

You may load a Guidance Pattern before you start, or during a job.

1. Select to access the ***Select Guidance Pattern*** screen.

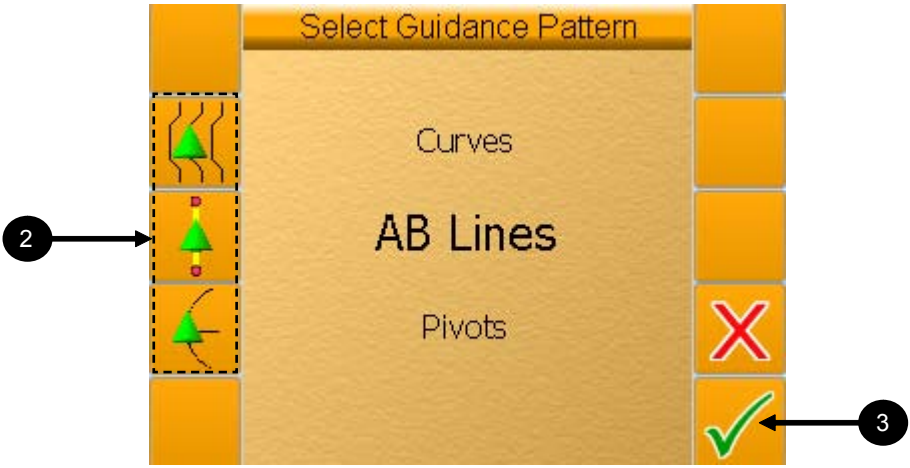


Figure 10-27. Select a Guidance pattern

2. Select a guidance pattern from the 3 buttons. For this example we will select AB Lines.

3. Select to confirm the selection.

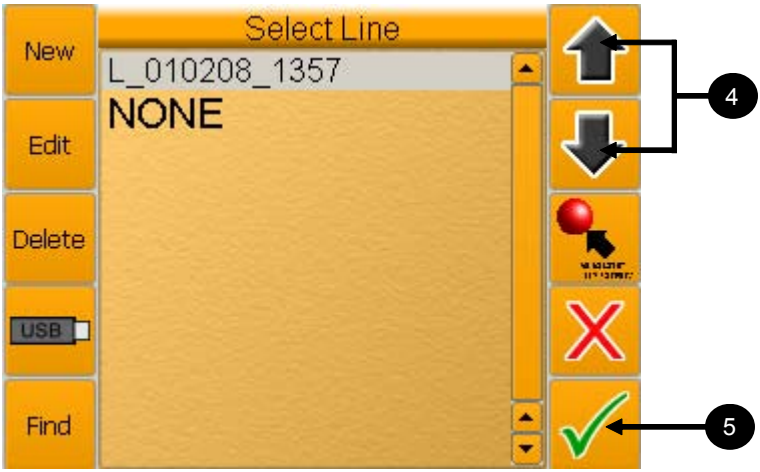


Figure 10-28. Select a Guidance pattern file

4. Select the up and down arrow buttons to select a guidance pattern file.

5. Select to confirm your selection and return to the Guidance Screen

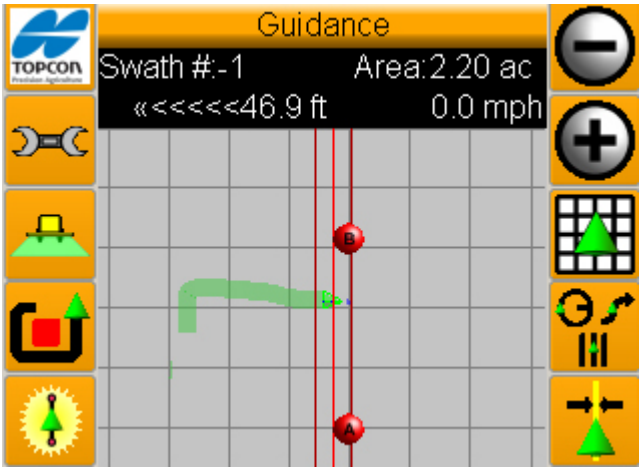


Figure 10-29. Guidance Pattern will load on screen

6. The Guidance Pattern will be loaded onto the screen (figure 10-29).

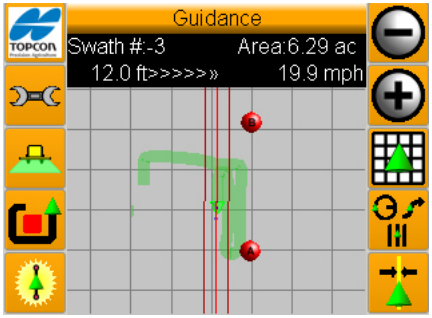


Figure 10-30. Use selected Guidance Pattern

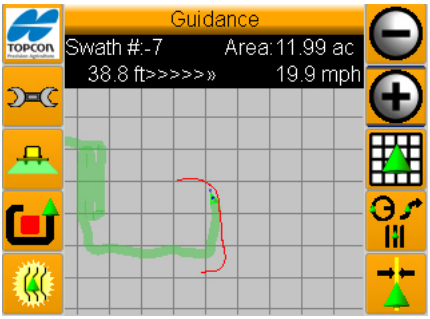


Figure 10-31. Load another Guidance Pattern

7. Repeat the above procedure if you wish to load another Guidance Pattern (figure 10-31) that has been saved for the same field.

Steering with Guidance

This section will explain how to read some of the steering indicators that appear on the screen and light bar while driving to a guidance pattern. The images below display an AB Line Guidance pattern.

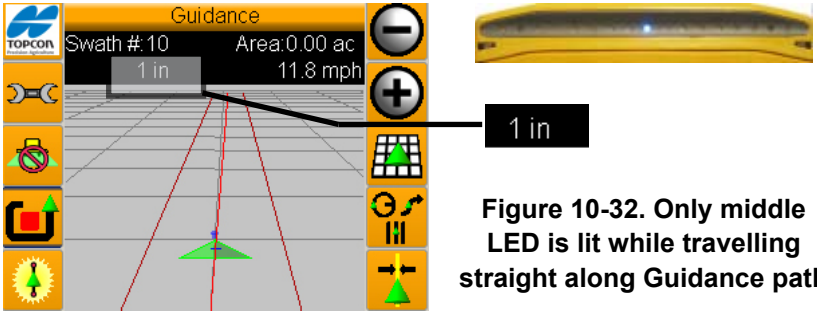


Figure 10-32. Only middle LED is lit while travelling straight along Guidance path

When you are travelling in a straight line along a guidance path, only the middle LED should be lit on the lightbar.

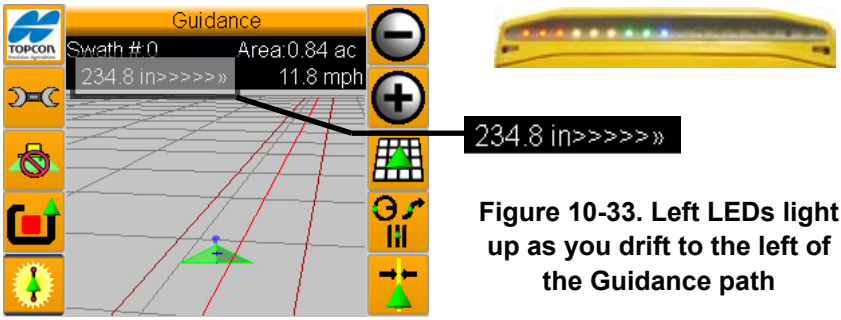


Figure 10-33. Left LEDs light up as you drift to the left of the Guidance path

If your vehicle is travelling left of the guidance path, the LEDs on the left of the lightbar will begin to light up. The further to the left you move from the guidance path, the more LEDs will be lit.

The indicator screen also indicates how far off center you are. More arrows pointing to the right indicate that you need to steer more to the right to get back on center.

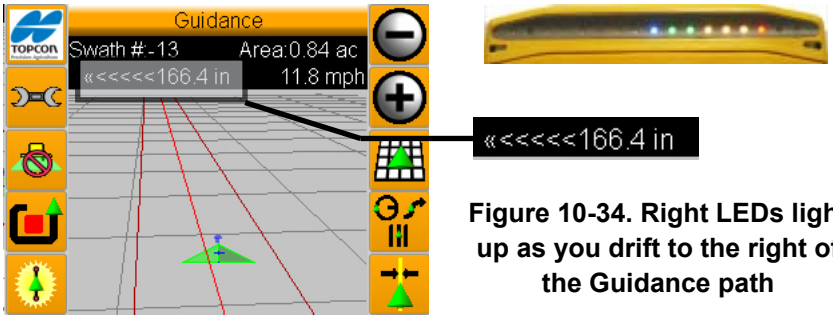


Figure 10-34. Right LEDs light up as you drift to the right of the Guidance path

If your vehicle is travelling right of the Guidance path, the LED's on the right of the lightbar will begin to light up. The further to the right you move from the guidance path, the more LEDs will be lit (figure 10-34).

The screen also indicates with left pointing arrows that you need to steer more to the left to go back to center. The closer you are to center, the less arrows that are displayed and less LEDs are lit.

For AB Lines and Pivot Guidance Pattern only

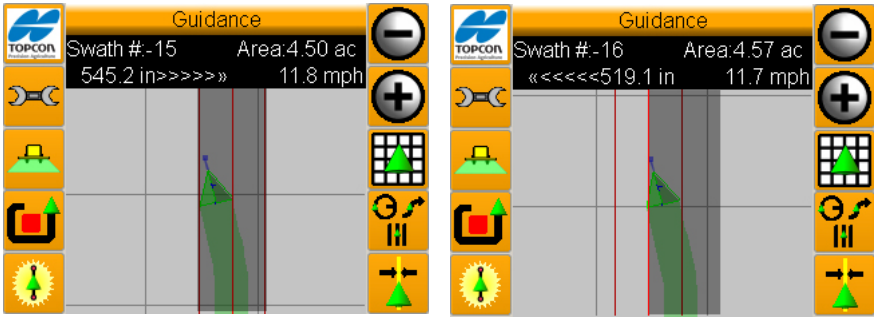


Figure 10-35. A New Guidance Path Appears Parallel to the Previous Path

The grey tinted area shows the initial Guidance path. If the swath of your vehicle completely moves off the current Guidance path, a new guidance path will be formed, parallel to the previous line, in the direction your vehicle is moving. This can be seen in figure 10-35.

For Curved Guidance Pattern only

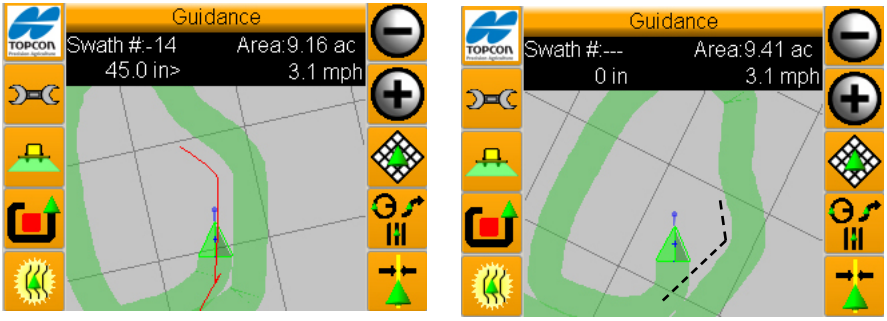


Figure 10-36.The Guidance Path Disappears if the Vehicle swath is Too Far Away from Previously Covered Areas

If the swath of your vehicle is not touching the Guidance path, the Guidance path will disappear. The black dotted line indicates the original Guidance path.

Try to drive your vehicle within at least half a swath width from previously covered areas, to see your Curve Guidance path.

Backup and Import Files from Thumbdrive

This chapter will explain how to backup all your saved Job, Boundary and Guidance Pattern files to a thumbdrive and also how to import these files from the thumbdrive into your PCS100 console.

Backing Up to Thumbdrive

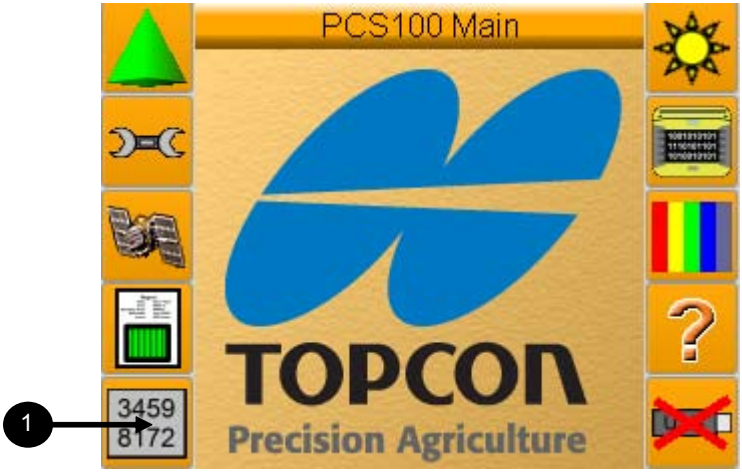


Figure 11-1. Access Diagnostics screen

Make sure that you have a thumbdrive with enough file space inserted into the USB port on the front of the console before proceeding.

1. Select to access the ***Diagnostics*** screen.

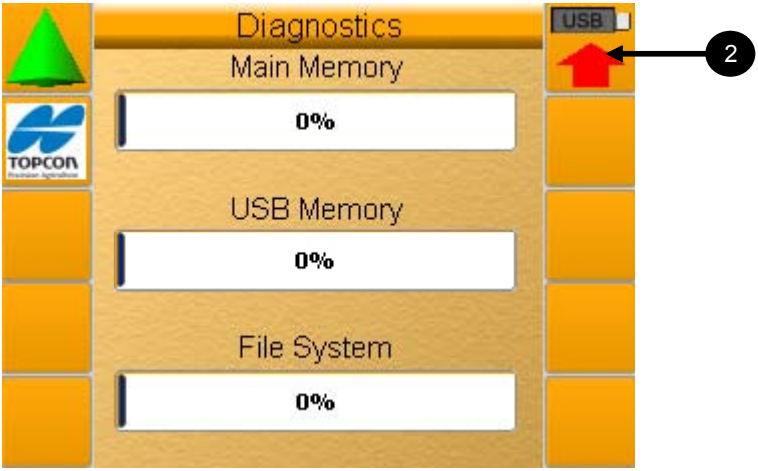


Figure 11-2. Back Up all Job, Boundary and Guidance Pattern Files

2. Select to backup all your Job, Boundary and Guidance Pattern Files to your thumbdrive (figure 11-2).

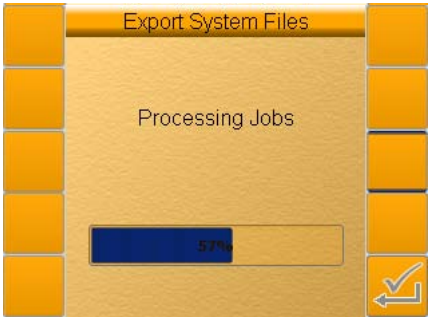


Figure 11-3. Back Up in Progress

Figure 11-4. Back Up Complete

3. You should see the above screens. If the backup is successful, you will see the image in figure 11-4.

4. Select to exit the screen.

   You will be returned to the ***Job Selection*** screen.

Importing Files from Thumbdrive

To import your Job, Boundary or Guidance Pattern files from a thumbdrive, you have to access the screens where you select these files.

Figure 11-5. Job and Boundary Selection Screens

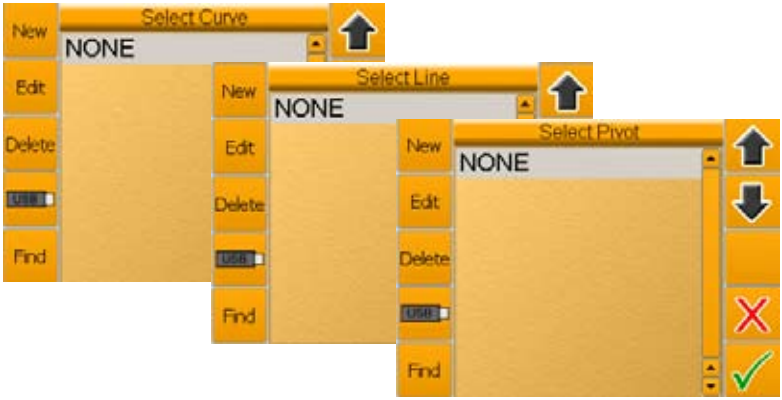


Figure 11-6. Curve, AB Line and Pivot Guidance Pattern Selection Screens

1. For any of these screens, select the USB icon to load the respective file type.

Figure 11-7. Select File to Import

The ***Import Jobs*** screen is displayed if you are importing a Job file from a thumbdrive. All the import screens are the same, except for the title that indicates what type of file is being imported.

2. Select the up and down arrows to select a file

3. Select to confirm your selection.

The job file will be loaded onto your console and you will be able to select it from the job selection screen. The same applies for Boundary files and Guidance Pattern files once they are imported, and they can be selected from their respective selection screens.

NOTICE *NOTICE*

The PCS100 automatically exports the Boundary and Coverage Maps as Shape Files. These files are saved in the 'Boundary Shapefiles' folder and 'Coverage Shapefiles' folder respectively when exported to the thumbdrive. These files can be imported and used in other software programs that use shape files.

Quick Start Reference

Create a Boundary

How to create a boundary in 5 steps:

1. Create a new Boundary file (Page 8-2)
2. Set your boundary offset (Page 8-7)
3. Select the Start recording boundary icon (Page 8-4)
4. Drive off along your boundary
5. Select Complete boundary icon when within 50 meters of starting point or drive within 5 meters of starting point to close boundary automatically (Page 8-5)

How to recall a boundary in 3 steps:

1. Enter the Job Setup screen (Page 8-9)
2. Enter the Boundary Selection screen (Page 8-10)
3. Select the Boundary file you want and confirm you selection (Page 8-10)

Start a Job

How to create a coverage map in 5 steps:

1. Create a new job file (Page 9-2)
2. Select a coverage sense method (Page 7-25)
3. Select the Start mapping icon (if in manual mode) or activate the switched input source whenever you want to map (Page 9-4)
4. Drive off around your field
5. Select, create and apply a Guidance pattern while driving for more accurate coverage. (Page 10-1)

How to recall a coverage map in 3 steps:

1. Enter the Job Setup screen (Page 9-6)
2. Enter the Job Selection screen (Page 9-7)
3. Select the Job file you want (Page 9-7)

How to create a coverage report in 3 steps:

1. Enter the Job Setup screen (Page 9-9)
2. Insert a thumbdrive into the PCS100 console
3. Select the create coverage report button (Step 2, Page 9-10)

Sample Job

This section will provide an example of how a Job can be done when utilizing the PCS100 software. If a field does not already have a boundary mapped and you want to perform coverage mapping, you may perform these two activites at the same time. Below are instructions on how to perform the coverage of your field in this manner.

1. Create a new Job file (Page 9-2)

2. Create a new Boundary file (Page 8-2)

   A Boundary file is created after the Job file to ensure that the boundary you create is recalled when that Job is recalled. Job files will recall boundary files but boundary files will not recall Job files

3. Set your boundary offset (Page 8-7)

4. Select a coverage sense method (Page 7-25)

5. Select the Start recording boundary icon (Page 8-4)

6. Select the Start mapping icon (if in manual mode) or activate the switched input source whenever you want to map (Page 9-4)

7. Drive off along your field boundary

8. Create a Curve Guidance pattern (Page 10-1)

   Normally Curves is selected for the first and second lap. AB Lines is then selected and this guidance pattern is used to complete the coverage of the rest of the field. Using Guidance, this is considered the most effective way to get maximum coverage on a rectangular shaped field.

9. Select the Complete boundary icon when within 50 meters of starting point or drive within 5 meters of starting point to close boundary automatically (Page 8-5)

10. Perform another lap around your field following the Curve Guidance Path that was created during your first lap

11. Create an AB Lines Guidance pattern (Page 10-5) and complete the coverage of your field

12. Select the Stop mapping icon (if in manual mode) or deactivate the switched input source whenever you want to stop mapping (Page 9-5)

Appendix A
Button Index

PCS100 Main

	Guidance Screen: Selecting this will show the guidance screen.
	Setup: Selecting this will access the setup screen, that allows for machine swath, language and units to be altered for the unit
	GPS: Accesses the GPS options
	Job Setup: Accesses the Job Setup screen
	Diagnostics: Selecting this will show Main Memory, USB Memory and file system space
	Day: If this is shown, the unit is selected for daylight mode, with a brighter screen
	Night: With this icon shown, the screen brightness dims, and the colour scheme changes to allow night time mode
	Reprogramming: If a USB device was fitted and it had a new version of software attached, this button would allow for the upgrading to commence
	Colour Selection: Allows the operator to tailor the screen colours to suit
	Hardware, Serial #, and Software versions are shown when this is selected
	USB Removal: Select this to safely remove any USB device that may be attached to the thumbdrive
	Import from USB: Select this icon to import files from a USB device inserted into the PCS100

Guidance

	Main Screen: Accessible from the Guidance screen, this allows the operator to access the job screen, day/night option and other options
	Manual Coverage Inactive: This icon indicates that the coverage map is inactive and will not be painted on the screen
	Manual Coverage Active: This icon indicates that the coverage map is active and the coverage map will be painted on the screeen
	Switched Coverage Inactive: This icon indicates that the coverage map is inactive and will not be painted on the screen
	Switched Coverage Active: This icon indicates that the coverage map is active and the coverage map will be painted on the screeen
	Boundary Ready: This icon indicates that boundary mapping is paused. Select this icon to begin boundary mapping
	Boundary Active: This icon indicates that boundary mapping is active. Select this icon to pause boundary mapping
	Close Boundary End points: This icon indicates that you are nearing the end point of your boundary. Select this icon to create a line between the two ends and close the boundary
	Boundary in use: This icon indicates that a boundary has been completed and is in use. Select this icon to clear the current boundary and start a new boundary file
	Place point A: Select this icon to place point A of the parallel line guidance pattern
	Place point B: Select this icon to place point B of the parallel line guidance pattern
	Create new AB Line: Select this icon to clear the current parallel line guide and create a new AB Line file

	Create New Curve Line: Select this icon to clear the current curve line guide and create a new Curve guidance pattern file
	Pivot OFF: Select this icon to start pivot guidance pattern creation
	Pivot Active: This icon indicates that pivot guidance pattern creation is active. The icon “square” will flash red and grey during this time
	Create New Pivot Line: Select this icon to clear the current pivot guidance pattern and create a new Pivot file
	Zoom Out: Select this icon to get a wider view of the Guidance screen
	Zoom In: Select this icon to get a closer view of the Guidance screen
	Overhead : This icon indicates that the screen map is in overhead ciew mode. This gives you an overhead view of your vehicle and the map
	Perspective: This icon indicates that the screen is in perspective mode. This gives you a cabin view perspective of the screen map
	North Up: This icon indicates that the screen map is in North Up mode. This gives you an overhead view of your vehicle and the map with the front of your vehicle always pointing towards the top of your screen
	Select Guidance Pattern: Select this icon to enter the ‘Select Guidance Pattern’ menu
	Nudge: Select this icon to compensate for GPS drift when using AB Lines Guidance. When selected, the AB line will move to the position of the GPS Antenna

Setup

	Look Ahead: Select this icon to access the Enter Look Ahead Distance screen
	Units: Select this icon to access the Units screen
	Select Language: Select this icon to access the Select Language screen
	Implement Setup: Select this icon to access the Implement Setup screen
	GPS Antenna Location: Select this icon to access the GPS Location Setup screen
	Lightbar LED spacing: Select this icon to access the Enter LED Spacing screen
	Coverage Sense Setup: Select this icon to access the Coverage Sense Setup screen

GPS Settings

	Serial Port Setup: Select this icon to access the Serial Port Setup screen
	Select Baud Rate: Select this icon to select the Baud Rate
	Satellite Details: Select this icon to see how many satellites are currently detected, the correction age and the HDOP
	Select GPS receiver: Select this icon to access the Select Your GPS Receiver screen

Select Guidance Pattern

	Contour: Selects Contour Guidance pattern
	AB Lines: Selects AB Guidance pattern
	Pivot: Selects the Pivot Guidance pattern
	AB points Coordinates: Select this icon to manually edit the coordinates of the AB points when AB Lines is your chosen guidance pattern

Jobs

	Backup files or Create Coverage Report: Select this icon when in the Diagnostics menu to backup your files to a USB thumbdrive and when in the Job selection menu to create a Coverage Report
	Select Boundary: Select this icon to access the Select Boundary screen
	Enter Notes: Select this icon to access the Enter Notes screen

Select Boundary - Boundary Offset Icons

	Boundary Offset: Select this icon to access the Enter Boundary Offset screen. This icon indicates that the boundary line will be drawn from the center of the swath
	Boundary Offset_Left: Select this icon to access the Enter Boundary Offset screen. This icon indicates that the boundary line will be drawn from the left side of the swath
	Boundary Offset_Right: Select this icon to access the Enter Boundary Offset screen. This icon indicates that the boundary line will be drawn from the right side of the swath

GPS Location

	Antenna Height: Select this icon to enter the GPS Antenna height from the ground.
	Antenna Forward Location: Select this icon to enter the distance from the drive wheels to the antenna.
	Antenna Offset: Select this icon to enter the distance, left/right that the Antenna is located from the center line of the vehicle.

Implement Setup

	Application width: Select this icon to enter the Swath Width
	Inline Offset: Select this icon to enter the Inline Offset. This is the offset of the vertical centerline of the swath from the vertical centerline of the GPS
	Implement Offset: Select this icon to enter the Implement Offset. This is the offset of the horizontal centerline of the swath from the horizontal centerline of the GPS
	Underlap/Overlap: Select this icon to enter the amount of swath overlap or underlap. This value will determine the spacing of the guidelines when using a Guidance Pattern to perform coverage mapping

Units

	Enter Hour: Select this icon to enter the hour for the Time settings.
	Enter Minutes: Select this icon to enter the minutes for the Time settings
12h/ 24h	Time Format: Select this icon to change between the 12 hour clock and 24 hour clock format
mmddy ddmmy	Date Format: Select this icon to change between the month/day/ year and day/month/year date format
	Units: Select this icon to change between Metric and English units of measurement

General Icons

	Scroll Up: Select this icon to scroll up a window
	Scroll Down: Select this icon to scroll down a window
	Next Selection: Select this icon to scan through available selections
	Cancel: Select this icon to cancel any selections or changes that you have made and return to the previous screen
	Accept: Select this icon to accept any selections or changes that you have made and return to the previous screen
	Accept: Select this icon to accept any selections or changes that you have made and return to the previous screen

Number Pad Icons

01	Zero and One: Select this icon once to enter 0 or twice quickly to enter 1
23	Two and Three: Select this icon once to enter 2 or twice quickly to enter 3
45	Four and Five: Select this icon once to enter 4 or twice quickly to enter 5
67	Six and Seven: Select this icon once to enter 6 or twice quickly to enter 7
89	Eight and Nine: Select this icon once to enter 8 or twice quickly to enter 9
+/- C	Positive, Negative, Clear: Select this icon once slowly to add a positive or negative sign to your number or select this icon twice quickly to clear the number from the screen
←	Backspace: Select this icon to delete the last number you entered on the screen
.	Enter Decimal point: Select this icon to enter decimal place numbers
- _	Dash and Underscore: Select this icon once to enter a dash '-', or select this icon twice quickly to enter an underscore '_'

Alphanumeric Pad Icons

ABCD	A-D: Select this icon once to enter ‘A’, twice quickly to enter ‘B’, thrice quickly to enter ‘C’ and four times quickly to enter ‘D’
EFGH	E-H: Select this icon once to enter ‘E’, twice quickly to enter ‘F’, thrice quickly to enter ‘G’ and four times quickly to enter ‘H’
IJKL	I-L: Select this icon once to enter ‘I’, twice quickly to enter ‘J’, thrice quickly to enter ‘K’ and four times quickly to enter ‘L’
MNOP	M-P: Select this icon once to enter ‘M’, twice quickly to enter ‘N’, thrice quickly to enter ‘O’ and four times quickly to enter ‘P’
QRST	Q-T: Select this icon once to enter ‘Q’, twice quickly to enter ‘R’, thrice quickly to enter ‘S’ and four times quickly to enter ‘T’
UVWXYZ	U-Z: Select this icon once to enter ‘U’, twice quickly to enter ‘V’, thrice quickly to enter ‘W’, four times quickly to enter ‘X’, five times quickly to enter ‘Y’ and six times quickly to enter ‘Z’
[Space] <- C	Space, Backspace,Clear: Select this icon once to enter a space, twice quickly to backspace and thrice quickly to clear the screen
⇧/⌘	Change type pad: Select this icon to change the type pad. You may choose between Capital letters, normal letters and numbers

Multilingual Icons

English	New	Edit	Delete	Select Job	Clear	Yes	No
French	louvea	Editer	Effacer	Sélect. tâche	Effacer	Oui	Non
German	Neu	Editeiren	Löschen	Wahlen Aufgabe	Reinigen	Ja	Nein
Spanish	Nuevo	Editar	Borrar	Selecionar trabajo	Borrar	Si	No
Italian	Nuovo	Modifica	Cancella	Seleziona lavoro	Elimina	Si	No
Portuguese	Novo	Editar	Exduir	Seleziona lavoro	Limpar	Sim	Não
Russian	Новый	Редакция	Стереть	Выбери задание	Стереть	Да	Нет
Dutch	Nieuw	Bewerk	Verwijder	Kies taak	Leegmaken	Ja	Nee
Finnish	Uusi	Muokkaa	Poistaa	Valitse työ	Tyhjennä	Kyllä	Ei

Appendix B
Spare Parts List

General Parts (Kits AGA3408, AGA3416, AGA3409 Only)

Part Number	Description
9258-0000-02	GX-40 Display
9192-0000	GX-40 Lightbar
B105	Ram Mount Base
B103	Ram Mount Arm
9050-0004R	Carry Case
AGA3446	Operator Manual (CD) Multilingual
AGA3447	Quick Reference guide
AGA3240	Power/ CAN Harness
AGA3442	Remote Master Detect Harness
AGA1727	Mag-Mount (GPS)
AGA3493	PCS100 Operators Manual (Paper, English)
AGA3511	PCS100 Setup Sheet

Available in Kit with AGE-2 Antenna (AGA3408)

Part Number	Description
AGA3242	AGE-2 Antenna to PCS-100 Power Comms Harness
9060-1408	AGE-2 Antenna

Available in Kit with AGE-1 Antenna (AGA3416)

Part Number	Description
AGA3441	AGE-1 to PCS-100 Power Comms Harness
9060-1407	AGE-1 Antenna

Available in Kit without GPS Antenna (AGA3409)

Part Number	Description
AGA3443	Universal Power Comms GPS Harness

Accessory Kits

PCS-100 Transfer Kit (A3448)

Part Number	Description
B105	Ram Mount Base
AGA3240	Power/ CAN Harness
AGA3442	Remote Master Detect Harness

PCS-100 Hotshoe Kit (A3449)

Part Number	Description
9192-200	GX-40 Hotshoe
3020-0359	CAN Harness

PCS-100 Universal GPS Harness

Part Number	Description
AGA3443	Universal Power Comms GPS Harness

PCS-100 R130 Kit

Part Number	Description
AGA1870	CSI R130 Antenna and Receiver

Appendix C
Product Specifications

Electrical Specifications

Table C-1. Electrical Specifications

Supply Voltage	10 to 30VDC
Supply Current	1A Typical operating current Maximum at 12VDC input power, no peripheral equipment
Switched Output Power	5A Sensor/Conditioned output power
Ports	USB (Type A) Deutsch 12 pin (3)

Physical Specifications

Table C-2. Physical Specifications

Display	320x234 Color QVGA, high brightness.
Housing	Plastic
Switches	1 momentary push button (power on/off) 10 x momentary application buttons
Connectors	3 ea 12 pin DTM06-12S Deutsch connectors, unique keyed
Weight	4 lbs (1.814kg)

Environmental Specifications

Table C-3. Environmental Specifications

Operating Temperature	-20^{0}C to +60^{0}C (-68^{0}F to 140^{0}F)
Storage Temperature	-40^{0}C to +85^{0}C (-104^{0}F to 185^{0}F)
Moisture	Fully sealed from sand, dust and moisture to IP67 (MIL STD 810E)
Humidity	100% non-condensing
Vibration	MIL-810-F 14%c-17 on each axis
Shock	MIL-810-F 16.5-I to survive a 6.5ft (2 m) drop on hard surface

Envelope Dimensions

Envelope Dimensions	8” x 6” x 2.5” (203mm x 152mm x 63.5mm)

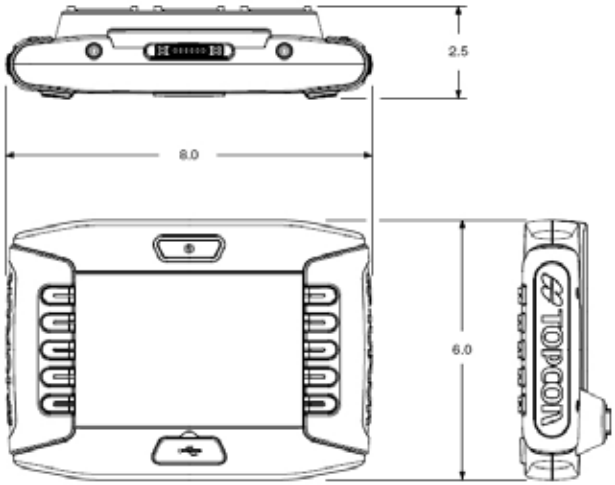
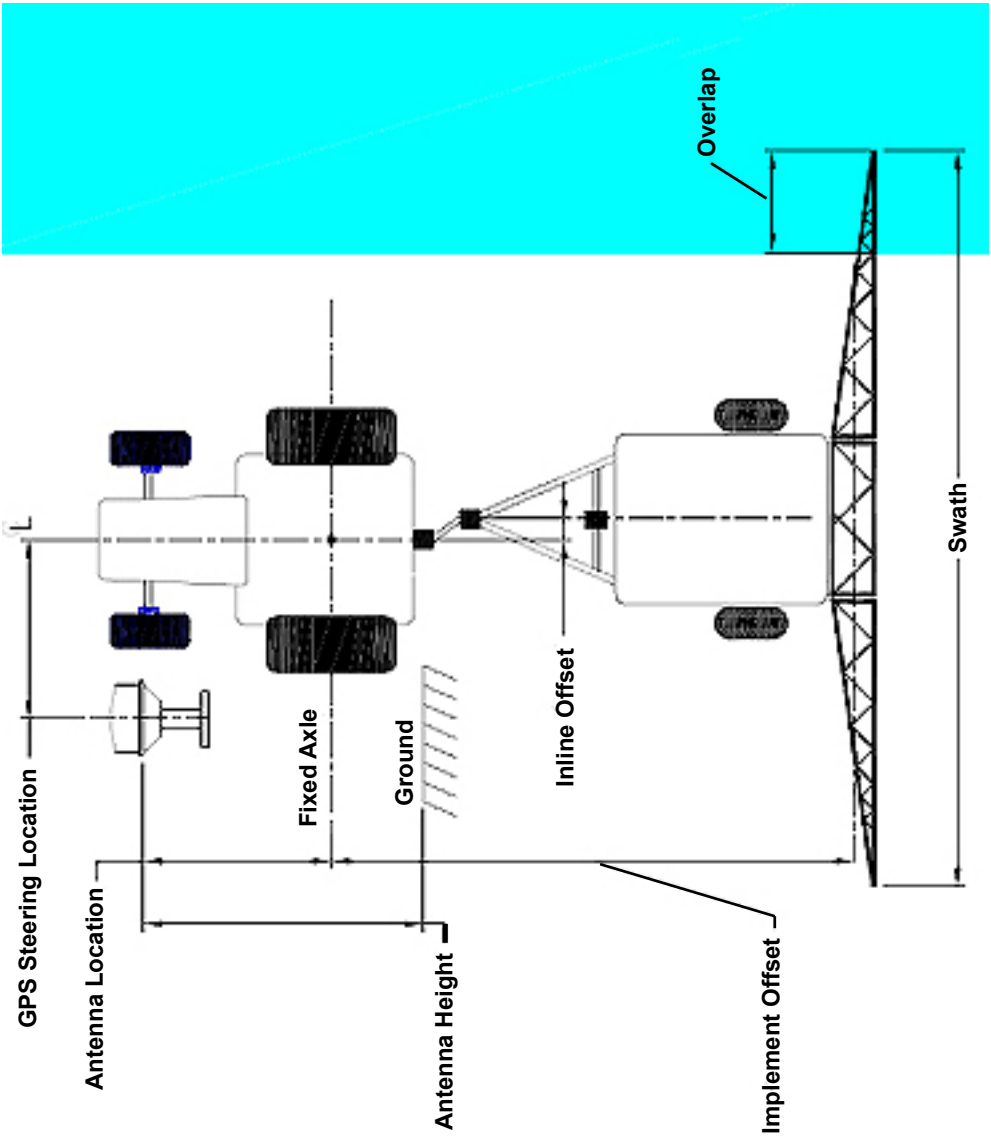


Figure C-1. Envelope Dimensions

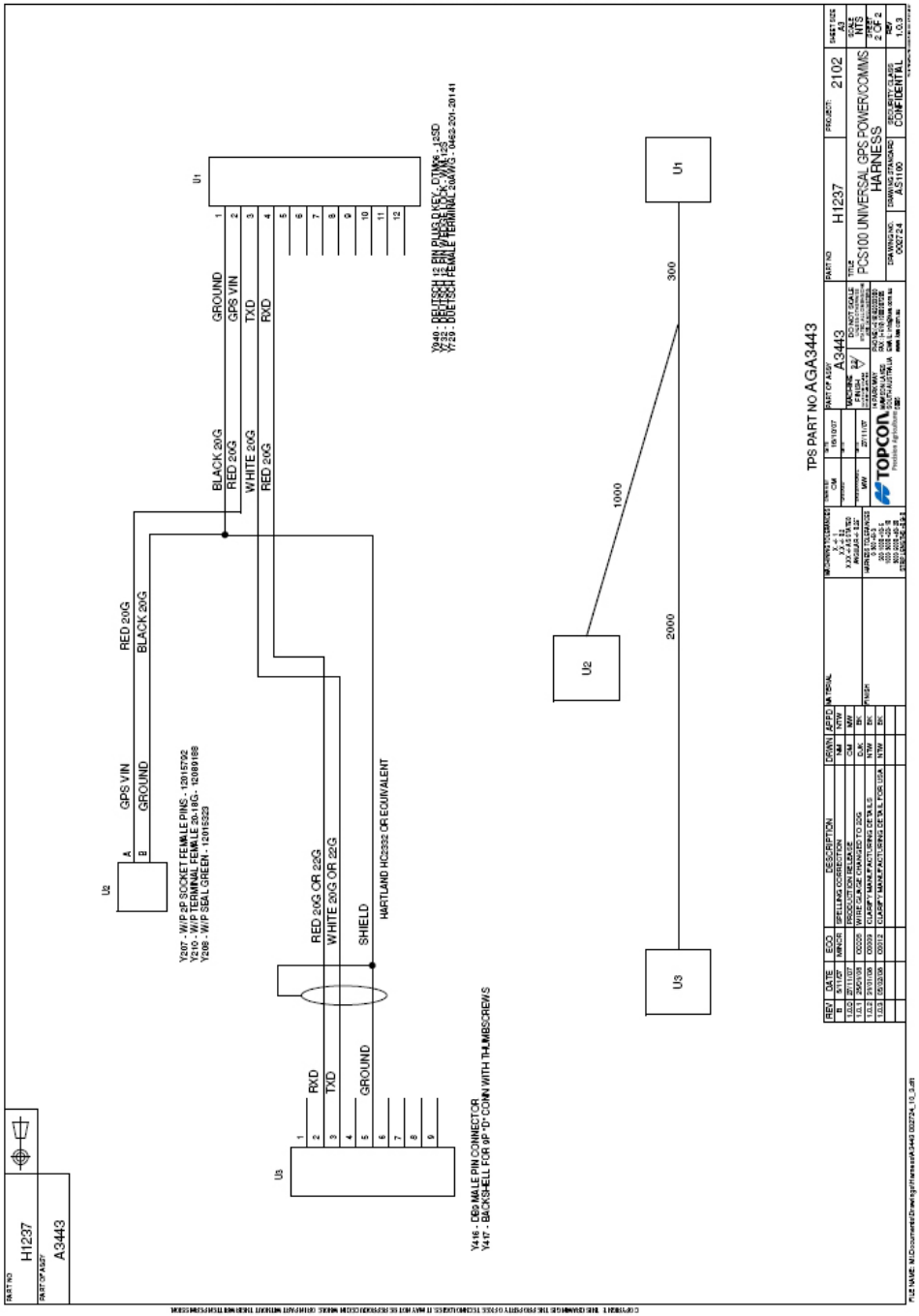
Appendix D
Tractor Schematic

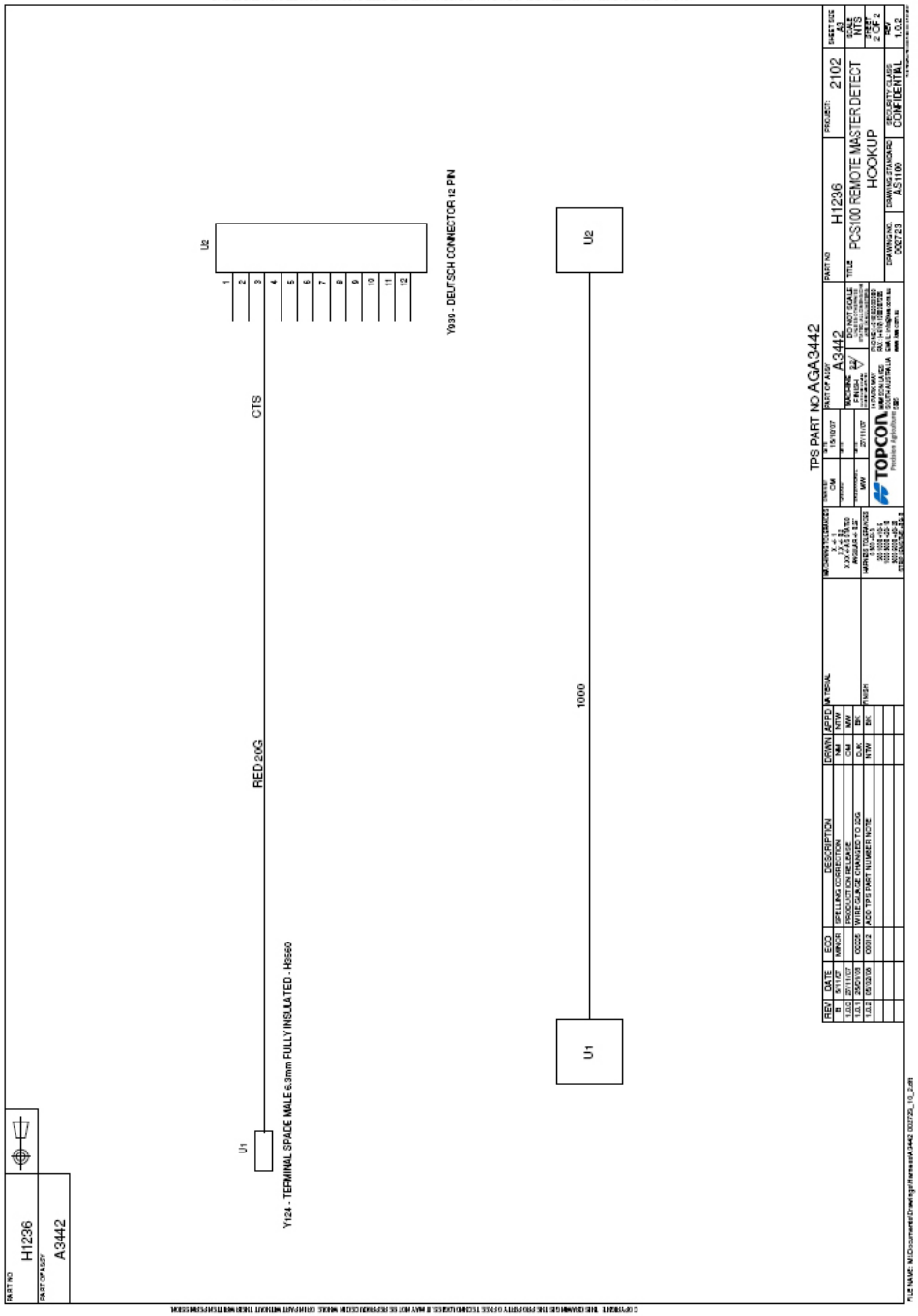


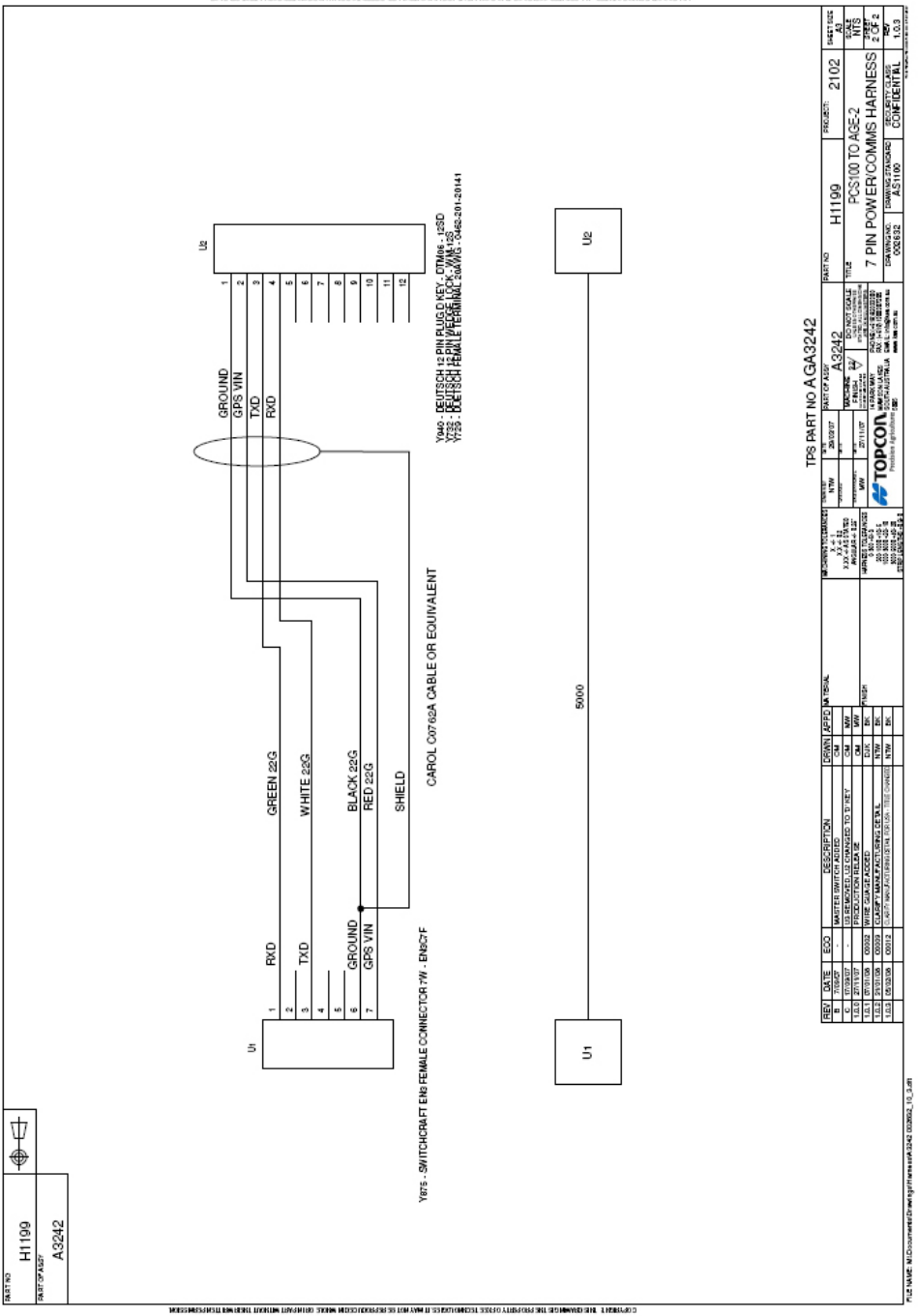
Notes:

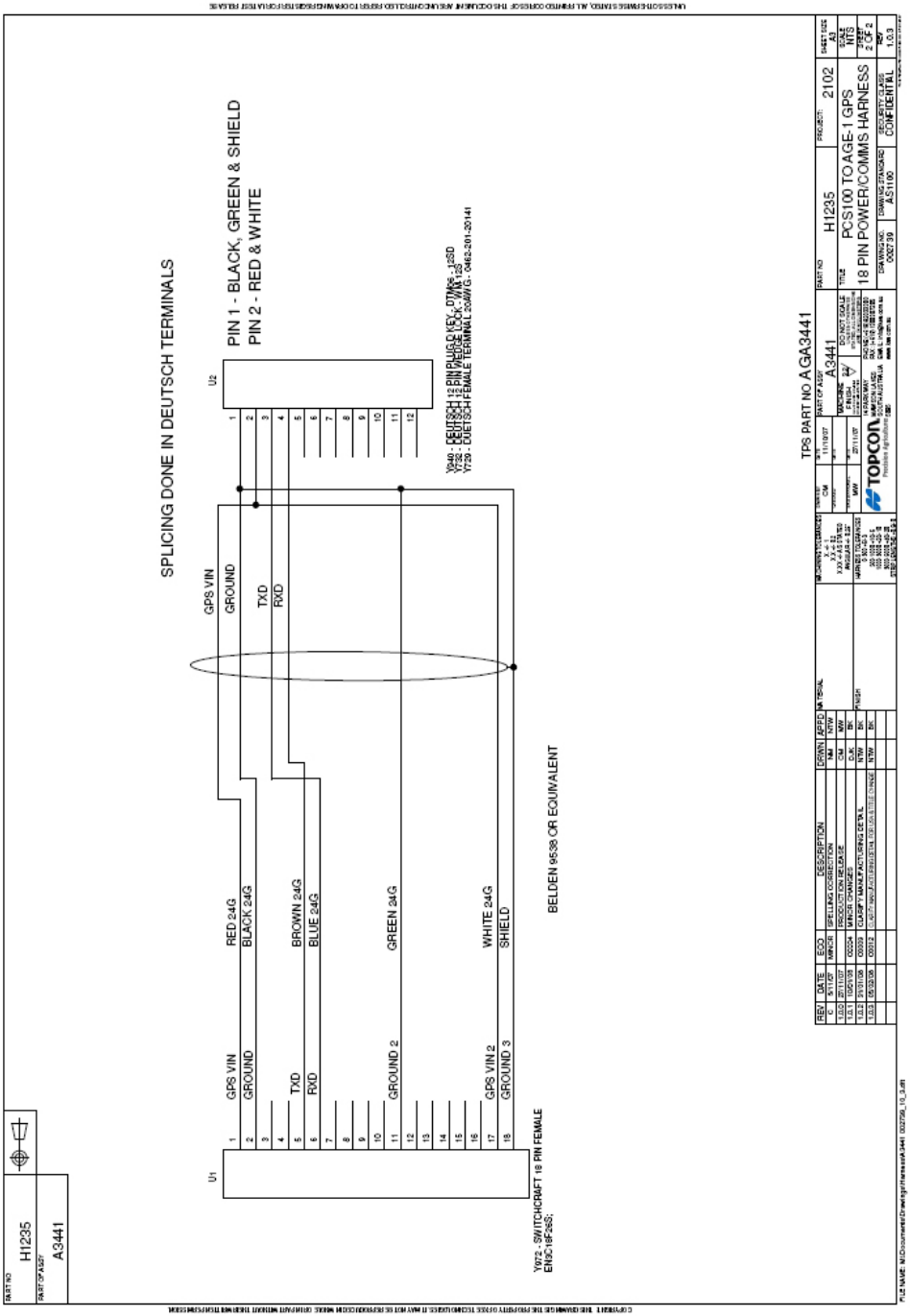
Appendix E
Electrical Schematics

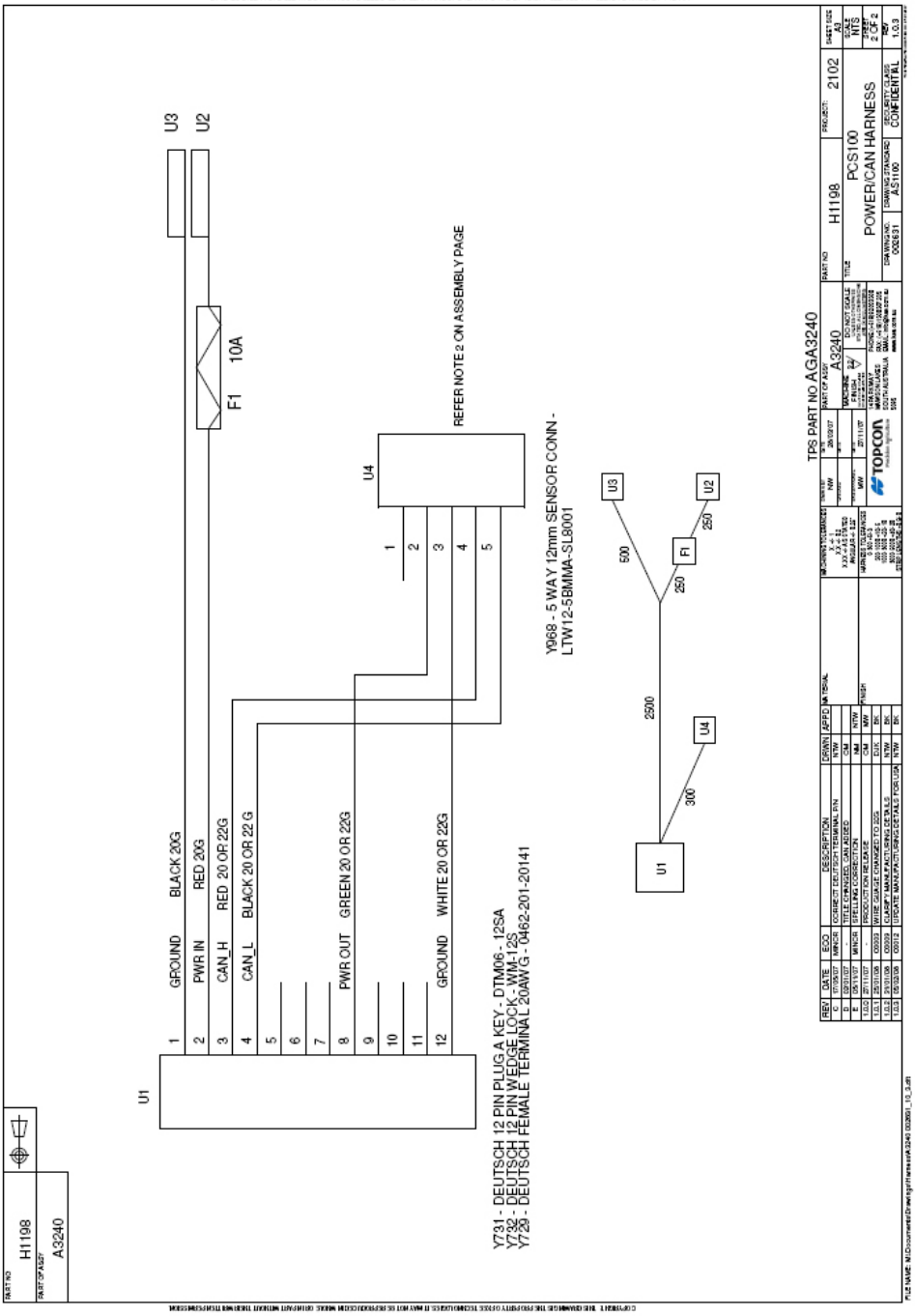
Part Number	Description	Page
AGA3443	PCS100 Universal GPS Power Comms Harness	E-2
AGA3442	PCS100 Remote Master Detect Hook Up	E-3
AGA3242	PCS100 to Novatel Smart GPS 7 Pin Power/ Comms Harness	E-4
AGA3441	PCS100 to Novatel Smart-V1 GPS 18 Pin Power/ Comms Harness	E-5
AGA3240	PCS100 Power/ CAN Harness	E-6


PART NO H1237
PART OF ASSY A3443
U2
A GPS VIN
B GROUND
RED 20G
BLACK 20G
Y207 - W/P 2P SOCKET FEMALE PINS - 12015792
Y210 - W/P TERMINAL FEMALE 20-18G - 12089188
Y208 - W/P SEAL GREEN - 12015229
U1
BLACK 20G
RED 20G
WHITE 20G
RED 20G
GROUND
GPS VIN
TXD
RXD
Y209 - DEUTSCH 12 PIN PLUG RECEPTACLE DTM06-12SD
Y7 - 29 - DEUTSCH FEMALE TERMINAL 20#AWG - 0462-201-20141
U3
RED 20G OR 22G
WHITE 20G OR 22G
SHIELD
HARTLAND HC2332 OR EQUIVALENT
1 RXD
2 TXD
3 GROUND
Y4 - DB9 MALE PIN CONNECTOR
Y4 17 - BACKSHELL FOR 9P "D" CONN WITH THUMBSCREWS
U2
U3
U1
1000
2000
300
TPS PART NO AGA3443
REV DATE ECO DESCRIPTION DRWN APPD MATERIAL
A 8/11/07 EBP005 INITIAL RELEASE CM MW
B 27/11/07 DRAWING CORRECTED TO PRODUCTION RELEASE CM MW
1.0.0 29/01/08 000026 WIRE GAUGE CHANGED TO 20G CJK BK PWSH
1.0.1 29/01/08 000028 CLAMP MANUFACTURING DETAILS TBA NTW BK
1.0.2 29/01/08 000029 CLAMP MANUFACTURING DETAILS FOR USA NTW BK
1.0.3 29/02/08 000032 CLAMP MANUFACTURING DETAILS TBA NTW BK
DRAWN CM 16/10/07
APP'D MW 27/11/07
MATERIAL
PART OF ASSY A3443
DO NOT SCALE DRAWING
FINISH
TOPCON
PART NO H1237
PROJECT 2102
TITLE PCS100 UNIVERSAL GPS POWER/COMMS HARNESS
DRAWING NO. 002724
DRAWING FRANCAIS AS1100
SECURITY CLASS CONFIDENTIAL
SHEET SIZE A4
SCALE NTS
SHEET 2 OF 2
REV 1.0.3
FILE NAME: M:\Documents\Drawings\Harness\A3443 002724_10_3.dft


TPS PART NO AGA3442
PART NO H1236
PART OF ASSY A3442
PROJECT 2102
TITLE PCS100 REMOTE MASTER DETECT HOOKUP
SCALE NTS
SHEET 2 OF 2
REV 1.0.2
DRAWING NO. 002723
DRAWING STANDARD AS1100
SECURITY CLASS CONFIDENTIAL
TOPCON
Y124 - TERMINAL SPACE MALE 6.3mm FULLY INSULATED - H3560
RED 20G
CTS
U1
U2
1000
Y939 - DEUTSCH CONNECTOR 12 PIN
REV DATE ECO DESCRIPTION DRWN APPD
1.0.0 27/11/07 00025 ADD TPS PART NUMBER NOTE
1.0.1 25/01/08 00012 ADD TPS PART NUMBER NOTE
1.0.2 05/02/08 00012 ADD TPS PART NUMBER NOTE
PART NO H1236
PART OF ASSY A3442

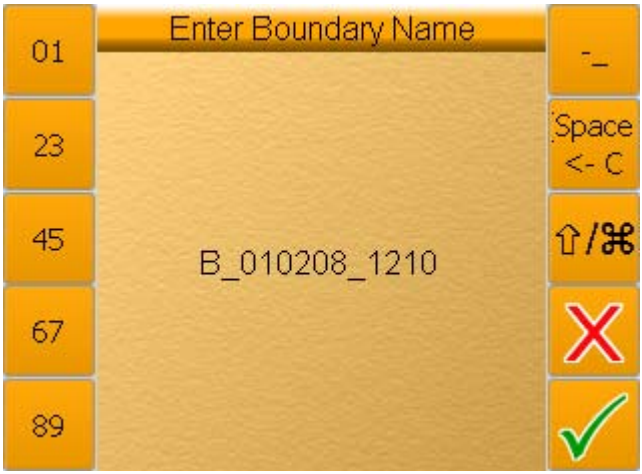

U1
U2
RXD
TXD
GROUND
GPS VIN
GREEN 22G
WHITE 22G
BLACK 22G
RED 22G
SHIELD
CAROL C0762A CABLE OR EQUIVALENT
Y875 - SWITCHCRAFT EN3 FEMALE CONNECTOR 7W - EN3CFF
Y940 - DEUTSCH 12 PIN PLUG DKEY - DTM06 - 12SD
Y732 - DEUTSCH 12 PIN VIEWER CLOCK - DTM06 - 12SD
Y729 - DEUTSCH FEMALE TERMINAL 20AWG - 0462-201-20141
5000
TPS PART NO AGA3242
PART NO H1199
PCS100 TO AGS-2
7 PIN POWER/COMMS HARNESS
2102
A3242
TOPCON
H1199
A3242


SPLICING DONE IN DEUTSCH TERMINALS
PIN 1 - BLACK, GREEN & SHIELD
PIN 2 - RED & WHITE
U1
U2
GPS VIN
GROUND
TXD
RXD
RED 24G
BLACK 24G
BROWN 24G
BLUE 24G
GREEN 24G
WHITE 24G
SHIELD
GROUND 2
GROUND 3
BELDEN 9538 OR EQUIVALENT
Y072 - SWITCHCRAFT 18 PIN FEMALE
ENC-18F26S;
Y040 - DEUTSCH 12 PIN PLUG & KEY - DTM06 - 12SD
Y732 - DEUTSCH 12 PIN WEDGE LOCK - WM 12S
Y729 - DUETSCH FEMALE TERMINAL 2000/FG - 0462-201-20141
TPS PART NO AGA3441
PART NO H1235
PART OF ASSY A3441
PROJECT 2102
TITLE PCS100 TO AGE-1 GPS
18 PIN POWER/COMMS HARNESS
DRAWING NO. 002739
DRAWING STANDARD AS1100
SECURITY CLASS CONFIDENTIAL
SCALE NTS
SHEET 2 OF 2
REV 1.0.3
TOPCON
REV DATE ECO DESCRIPTION DRWN APPD
1.0.0 5/11/07 MINOR SPELLING CORRECTION CM NW
1.0.1 10/05/08 00004 PRODUCTION RELEASE MINOR CHANGES CLK BK
1.0.2 29/10/08 00009 CLARIFY MANUFACTURING DETAIL NW BK
1.0.3 05/02/08 00012 CLARIFY MANUFACTURING DETAIL NW BK
FILE NAME: M:\Documents\Drawings\Harness\A3441 002739_10_3.dft

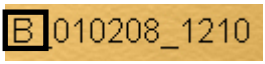

U1
U2
U3
U4
F1
10A
REFER NOTE 2 ON ASSEMBLY PAGE
1 GROUND BLACK 20G
2 PWR IN RED 20G
3 CAN_H RED 20 OR 22G
4 CAN_L BLACK 20 OR 22 G
5
6
7
8 PWR OUT GREEN 20 OR 22G
9
10
11
12 GROUND WHITE 20 OR 22G
Y731 - DEUTSCH 12 PIN PLUG A KEY - DTM06 - 12SA
Y732 - DEUTSCH 12 PIN WEDGE LOCK - WM-12S
Y729 - DEUTSCH FEMALE TERMINAL 20AWG - 0462-201-20141
Y968 - 5 WAY 12mm SENSOR CONN - LTW12-5BMMA-SL8001
500
250
250
2500
300
TPS PART NO AGA3240
PART NO H1198
PART OF ASSY A3240
PROJECT 2102
SHEET SIZE A3
SCALE NTS
SHEET 2 OF 2
REV 1.0.3
TITLE PCS100 POWER/CAN HARNESS
DRAWING NO. 002631
DRAWING STANDARD AS1100
SECURITY CLASS CONFIDENTIAL
TOPCON
DO NOT SCALE
REV NO 1.0.3
DRAWN NW
DESCRIPTION
CORRECT DEUTSCH TERMINAL PIN
TITLE CHANGED, CAN ADDED
SPELLING CORRECTION
PRODUCTION RELEASE
WIRE GUAGE CHANGED TO 22G
CLARIFY MANUFACTURING DETAILS
UPDATE MANUFACTURING DETAILS FOR USA
PART NO H1198
PART OF ASSY A3240

Appendix F
File Name Information

When you create a new file, a file name is automatically generated. In the image below is a file name automatically generated for a Boundary file.



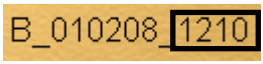
Every file name can be broken into 3 part. The first part represents for the file type. For the above example this is represented by ‘B’.



The second part represents the date the file was created. This is in the format of day/month/year or dd/mm/yy. For the above example, the date is 1st February 2008.

The third part represents the time the file was created. The time is always displayed in 24 hour clock format. This means that 0000

represents 12:00am and 2300 represents 11:00pm. For the above example, the time is 12:10pm.



Below are examples of each file type and explanations of what they represent.

Example	File Type	Date	Time
C_010208_1351	Curve	1st February 2008	1:51pm
L_010208_1357	Line (AB)	1st February 2008	1:57pm
P_040208_1121	Pivot	4th February 2008	11:21am
B_010208_1210	Boundary	1st February 2008	12:10pm
Job140108_0034	Job	14th January 2008	12:34am

As you would have noticed, the first letter of the file name represents the first letter of the file type.

These automatically generated file names provide a good reference for you to keep track of which files belong to the same Job.

Boundary files and Guidance Patterns files are generally created in conjunction with a Job. The duration of a Job is stated in the coverage report and by knowing when a Job was started and stopped, you will be able to easily locate other related files.

Appendix G
Using a USB Thumbdrive

This section will explain how to properly insert and remove a USB device from the PCS100 console.

Inserting a USB thumbdrive

Figure G-1. PCS100 Front

On the front of your console is a rubber flap (Fig G-1). This rubber flap should be in place whenever a USB thumbdrive is not connected to the PCS100 to prevent moisture and dust from entering and damaging the console.

Figure G-2. Remove the rubber flap

Place the tip of your finger in the notch above the rubber flap (Fig G-2).

Pull lightly to remove the rubber flap and expose the USB port.

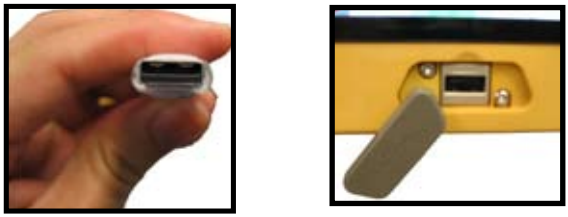


Figure G-3. Ensure USB thumbdrive is oriented correctly

There is only one way to plug the in the USB thumbdrive, so ensure that it is oriented correctly (Fig G-3).

WARNING

Inserting the thumbdrive in incorrectly can result in permanent damage to the USB port

Figure G-4. Correctly Inserted USB thumbdrive

The USB thumbdrive should slot in with light pressure when inserted correctly (Fig 5-4).

Removing a USB thumbdrive

Figure G-5. Press the Safely Remove USB thumbdrive button

Before your remove the USB thumbdrive you must press the ***Safely Remove USB thumbdrive*** button (Fig 5-3).

WARNING

Failure to select the safely remove thumb drive button before removing the thumb drive could lead to permanent damage and potential loss of data to your thumbdrive.

Figure G-6. Safe to Remove USB Thumbdrive screen

You may remove the USB thumbdrive when the screen shown in Figure G-6 appears. It should display “The USB device is safe to remove now”.

Grip the thumbdrive firmly and pull to remove the USB thumbdrive from the USB port.

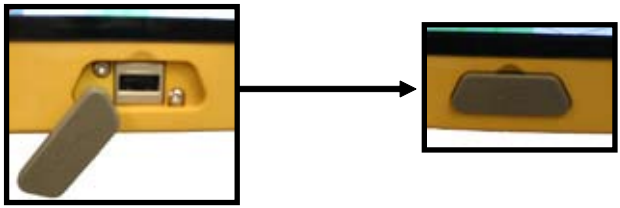


Figure G-7. Replace the rubber flap

Once the USB thumbdrive is removed, replace the rubber flap (Fig G-7).

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